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ORIGINAL COMMUNICATIONS.

THE TREATMENT OF SCARLET FEVER.

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Scarlet fever must be included amongst those diseases for which there is no specific treatment. Its cause is unknown and we have no agent whose influence is exerted against this causative factor directly. The treatment therefore is limited to the general care of the patient and to the prompt recognition of and attention to symptoms and complications as they arise.

Isolation of the patient must be insisted upon for the good of the public in the prevention of the spread of the disease. In private houses effective quarantine can be secured only when a whole floor is set aside for the use of the patient. Rigid quarantine regulations when enforced by the municipality do much to prevent the spread of the contagion. In any event the greatest care should be exercised by the physician, nurse, and attendants in the use of gowns in the sick-room and in the cleansing of hands, linen, utensils, etc.

In institutions it is recommended that each patient have a minimum of one hundred and forty-four square feet of floor space. Septic and mild cases should be kept in separate wards. In fact, the more we approach the complete isolation of individual patients, the closer we come to the ideal.

Smaller patients should be kept in bed at least four weeks. This prevents them from being subjected to the dangers of changes in temperature and carries them past the period when kidney complications are likely to occur. In hospital practice this also renders easier the enforcement of ward discipline and prevents in a measure the spread of cross-infections. Weather conditions should influence us in choosing the time of allowing the convalescent out-of-doors. On quiet, sunny days any child able to stand well or to walk, after being once out of bed, should be allowed out-of-doors. Damp or inclement weather of course will keep the patient indoors.

Careful attention to the skin should be given from the very first. A daily bath with soap and tepid water is positively called for. This not only assists in elimination, but helps to rid the body of dead skin and to promote the growth of new skin.

During the stage of fever a tepid sponge should be given every third hour if the temperature goes as high as 102° F. In convalescence a daily cleansing tub-bath should be given.

Inunctions used with the idea of preventing the scattering of the scales of skin are not called for in hospital practice. The idea that the infecting agent resides in the scaling particles of skin has been discarded by practically all contagious workers. It is the general belief now that the specific organism exists in the discharges from the nose, throat, ears, and glands.

The temperature of the sick-room or

ward is important. We find that patients, especially the septic ones, thrive best when kept in rooms at a temperature of from 55° to 60° F. The milder acute cases as well as convalescents do well in a temperature of 68° to 70° F.

Diet in scarlet fever must receive the closest attention. As vomiting in most cases is quite persistent in the first twenty-four hours, it will do no harm if all nourishment be withheld during that time. Thereafter during the acute stage a pure milk diet is the ideal one. It is my practice to have the patient given food at three-hour intervals; as much milk as the patient may desire. The patients, however, are not awakened for food or medicine. Meat broths are not desirable if milk can be taken. But in addition to the milk a daily feeding of some fresh fruit juice, well diluted with water, should be given. Water should be given freely at regular intervals. There is no objection to the use of good carbonated waters.

In mild cases, or those of moderate severity, no difficulty will be experienced in keeping up the patient's strength on a pure milk diet. The average case I keep on milk and fresh fruit juices for seventeen days. Then if the temperature be normal, the diet is increased by the addition of soft-boiled eggs, stewed fruits, oatmeal, puddings, bread and butter. In a week more, when the danger of nephritis is practically over, the diet may be again increased so as to include everything in the way of plain food, meat being allowed but once daily. The diet above described is sufficiently liberal to keep up the strength of the patient, and at the same time imposes not too great a task upon the kidneys.

In septic cases, when the fever persists for an unusually long time and especially when the patient is further weakened by complications, addition to the milk diet must be made even sooner than in the mild cases. Malted milk prepared in various ways, soft-boiled eggs, strained oatmeal, arrowroot, and stewed fruits may be given safely before other heavier foods are indicated. In adults a little weak tea or coffee may be given.

In the cases of persistent vomiting rectal feeding may be necessary, using beef juice, liquid peptonoids, and whisky in saline solution. When the sore throat is of a very severe nature, swallowing may be difficult. It is rare, however, that this situation cannot be successfully met by the exercise of the proper amount of patience and tact on the part of the parent or nurse.

Febrile complications call for a continuance of the milk diet, except as mentioned in cases of severe sepsis. The diet in nephritis will be considered under that heading. Other complications call for no special modification of diet.

As has been stated, there is no special treatment for scarlet fever. The medical treatment, except in the case of complications, is comparatively simple.

A bright, well-developed rash denotes good heart action and is to be desired. Should the rash be scant and not of a bright-red color, the use of external measures, such as the hot pack, the mustard pack, or wrapping the patient in hot blankets, is called for. This is true even when the temperature is excessively high, because the resulting increase in skin elimination will bring with it a drop in temperature and render the patient less restless.

During the fever I routinely give potassium citrate, alone or in combination with sweet spirits of niter and solution of ammonium acetate. These act as a febrifuge or diuretic. The citrate is given until the temperature has been normal for four or five days. Then Basham's mixture is substituted, and later, when the patient is on a full diet, the syrup of iodide of iron with syrup of hypophosphites compound is the tonic of choice.

In the hospital work the hair of all patients under fourteen is cut. In private practice the physician must be guided by circumstances.

Although the treatment aimed to counteract the causative agent of scarlet fever has so far been of no avail, yet this has

been attempted. The use of polyglot vaccines from many strains of streptococci has not given results of value and has been abandoned. At present at the Philadelphia Hospital for Contagious Diseases we are making certain investigations in the use of a leucocytic extract, made after the method of Hiss. We hope to say more later concerning this. Attempts also have been made to influence the course of the disease by the use of blood serum obtained from convalescents, the serum being tested by the Wassermann reaction and used with every necessary precaution. Hitherto it has been impossible to obtain the serum in sufficient quantities to furnish facts as to its value.

Treatment of special symptoms and complications of scarlet fever is a matter of greater difficulty than the management of a simple case. The mouth and throat should be subjected to a thorough daily inspection. It is possible for the mouth at any stage of the disease to show evidences of all forms of stomatitis, of tonsillitis, diphtheria, Koplik's spots, or Vincent's angina. In the ordinary sore throat of scarlet fever nothing further is required than a mild gargle—salt solution or a mild alkaline wash, such as liquor antisepticus alkalinus of the National Formulary suitably diluted. These gargles are merely cleansing and by no means germicidal. In septic sore throat the same method is used. If ulcerations occur they are cleansed by local applications of peroxide of hydrogen, followed by a half-strength saturated solution of potassium chlorate. Some of the more obstinate cases will require applications of ten-per-cent solution of copper sulphate. In certain cases, however, and under certain conditions I do allow irrigations with normal saline as hot as can be borne with comfort. This is permissible only with adults or larger patients, and when we have a nurse we know to be careful. There is far more danger from too much interference with the nose and throat than from too little. This is especially true with institutional cases.

The more severe complications may be grouped for convenience under two heads—those like nephritis and sepsis, which are systemic or general, and the more local complications, such as otorrhea, rhinitis, and enlarged glands.

Septic or toxic cases of scarlet fever present a class of patients who are very ill; who need the most careful attention to secure recovery. The diet has been mentioned already. It should be kept as a fever diet, yet in some cases must be somewhat broadened to maintain the patient's strength. The use of saline by bowel is a routine measure in all septic cases. I prefer to give continuous proctolysis after the method of Murphy. In some toxic cases, and especially in those in which great restlessness will prevent retention of the saline, I give it as a high injection at intervals, say four ounces every six hours. Stimulation is practically never needed in simple and uncomplicated scarlet fever. In the septic form it is often called for. I use whisky in one-drachm doses every four hours for a child six or eight years of age, and occasionally combine with it strychnine and caffeine in appropriate doses.

Beyond stimulation, elimination, and the maintenance of feeding, the treatment resolves itself into the management of intercurrent complications.

The most dreaded complication of scarlet fever is undoubtedly nephritis. The use of the milk diet and the mild diuretics while there is fever does much to avoid its occurrence. The urine should be examined daily, and if possible measured. With children, especially in institutions, the latter is difficult. I rely principally upon the routine chemical and microscopical examination. As soon as albumin appears in the urine vigorous treatment should be instituted. This must include:

1. Free purgation by magnesium sulphate in adults and larger children, and by castor oil in smaller children, say those under four years.

2. The hot pack. This should be used in varying frequency from once daily to

every four hours, and should be continued in use until on four successive days the urine is negative. After this the packs should be gradually withdrawn and the diet correspondingly increased. I consider the hot pack as our most important means of combating nephritis because of the vigorous skin elimination it causes. For the ordinary hot pack we may substitute one given by use of the electric heater or cabinet.

3. The use of diuretics. Potassium citrate alone or in combination, as mentioned above, is given routinely. I certainly consider these worthy of use. In the later stages of nephritis, when uremia is present, Basham's mixture is substituted. In addition we may use caffeine, diuretin, and infusion of digitalis. The latter I never use as a stimulant in scarlet fever, but as a diuretic only. If the stomach be retentive, all medicines are given by mouth. It is almost needless to mention that during acute nephritis the patient is kept on an absolute milk diet and given water freely. Later in the disease, say after three or four weeks, when there is anemia and emaciation, even though albumin may persist in the urine, the diet may be increased advantageously by the addition of eggs, bread and butter, and stewed fruits.

Under such vigorous treatment uremia should not supervene. If, however, a patient be brought into the hospital unconscious or in convulsions, the usual treatment for nephritis is carried out. In addition, venesection and purgation with oleum tiglii or elaterium should be routine measures. The use of dry cups and also hot saline by bowel is indicated.

Whether poultices do any good I cannot state positively. They do no harm and therefore are used—flaxseed and powdered digitalis leaves, four parts to one, or flaxseed and mustard, sixteen parts to one. These are made large enough to cover the entire lumbar region, and applied as warm as can be borne with comfort.

The other systemic conditions with which we most often have to deal are delirium and restlessness. The use of the ice-bag to the head, the sponge-bath, and in some cases the hot pack, is indicated. Amongst drugs, chloral, the bromides, and paraldehyde are the safest and best. In a few instances I have employed lumbar puncture followed by injection of a magnesium sulphate solution in sterile water, as is done in the treatment of tetanus. Whether there is anything of value in this treatment will have to be decided after further trial.

Of the more local complications we must consider:

Adenitis of the cervical variety. This is best treated by hot fomentations, or preferably hot poultices. Either the adenitis subsides or softening and suppuration take place, to be treated in the accepted way, by incision and drainage.

If there be a cellulitis, incision should be deferred until softening has taken place.

Arthritis must be treated by putting the affected joint or joints at rest. The use of salicylates internally and externally, or hot fomentations of magnesium sulphate solution, may be of some aid.

Otorrhea calls for most careful treatment in the acute stage. Any symptoms directing attention to the ears should call for a thorough inspection, and if the drumhead be red or bulging, incision in the lower posterior quadrant is called for. This brings instant and complete amelioration of symptoms, and should be done always. I do not believe in syringing discharging ears in the course of scarlet fever. External cleansing as a hygienic measure and to maintain free drainage is all that is necessary. If redness, tenderness, or fluctuation appear behind the ear, the periosteum over the mastoid should be incised. Rarely is further treatment necessary. I am opposed to the early radical mastoid operation. Operation should be delayed and will not be necessary unless other and more acute symptoms arise. Deafness, in my experience, is rare as a result of otitis media in scarlet fever.

Probably the most intractable of all the complications of scarlet fever is rhinorrhea.

In most cases it will resist successfully and indefinitely all treatment. This is especially annoying both to patient and doctor, because of the resulting prolongation of quarantine. Here, as in the handling of throat and ear conditions, the policy of conservatism is the better one. To facilitate drainage by the prevention of crust formations, I employ a formula of carbolic acid, eucalyptol, and liquid albolene, liberally applied to the nares. Instillation of a few drops of a ten-per-cent solution of argyrol may also be of benefit. The use of autogenous vaccines has been tried and abandoned.

And lastly, there must be included in the treatment of scarlet fever the determination of the time when a patient is fit for release from quarantine, when as nearly as we can judge he ceases to possess the power to infect. Because of its bearing upon the general public health there is nothing which calls for greater care.

There are no certain means by which we can arrive at a positive conclusion as to when a scarlet fever patient ceases to be a disease carrier. "Return cases," occurring after about two to five per cent of all hospital discharges, according to all statistics, have been the bugbear of physicians, and especially of those doing institutional work.

My own methods in this matter are based upon experience only. Approximately they are as follows:

All adults and larger children, never the subjects of complications, may be discharged any time after a detention of thirty-five days dating from onset of illness.

Mild cases in smaller children not the subject of complications will require a minimum detention period of forty-two days.

Cases with rhinorrhea are detained three months, and in every instance should be cultured for diphtheria bacilli.

Otorrhea calls for detention of from three to four months. A "running ear" should be kept for four months; a moist ear, in which but a few drops show every day or so, may be released in a shorter time, say in three or three and one-half months.

No cases with acutely inflamed glands should be discharged until all signs of inflammation shall have disappeared. Suppurating glands must have healed perfectly before the release of the patient is permitted.

Desquamation in itself probably does no harm at any stage of the disease, and certainly none after the end of the fourth week. Because, however, of the almost universally accepted belief in the infectiousness of the scales of skin, it is my custom to see that all cases are free from them before being released. In most all cases desquamation is complete by the end of the sixth week.

At the time of the patient's discharge he should be given a thorough and vigorous cleansing bath of carbolic soap and water. This should include the scrubbing of the head and the cleansing of the nose and ears. The mouth should be made clean with a mild antiseptic gargle after attention to teeth and gums by a dental surgeon.

The apartments occupied by the patient should be cleaned and fumigated in the accepted way. My own feeling is that a thorough washing of the rooms, furniture, and utensils with soap and water, and the steaming of mattresses and linen, will be all that is required.

And finally, in spite of the most careful observation of the patient from the beginning of illness to the end of quarantine, and in spite of the most painstaking attention to everything in any way connected with the treatment of the patient, the greatest danger of disease-spread will be the patient himself.

THE TREATMENT OF THE COMPLICATIONS OF BRIGHT'S DISEASE—A CLINICAL LECTURE AT THE JEFFERSON MEDICAL COLLEGE HOSPITAL.

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Although the term "Bright's disease" has been loosely applied to almost all abnormal conditions of the kidney except those characterized by the formation of cysts or dilatation of its pelvis, nevertheless, if the term is to be used at all, it ought to be limited to those states which are commonly known as chronic parenchymatous nephritis and chronic interstitial nephritis. Indeed, if the term Bright's disease is strictly applied, it had better be limited to parenchymatous nephritis of the chronic type. Certainly, the term "Bright's disease" ought not to be applied to acute nephritis, which is a very different condition, both pathologically and prognostically, from either of the chronic forms of nephritis which I have just named. Unless the process in acute nephritis is wide-spread and severe, or depends upon some profound intoxication, the prognosis is, comparatively speaking, favorable, for many cases of acute nephritis recover perfectly, whereas both of the forms of so-called chronic nephritis never recover, and although there may be periods in which the disease seems to be arrested, nevertheless the pathological process, in the course of months, makes a distinct and inevitable advance.

The use of the term "nephritis" in the two acute chronic forms of renal disease named is also unfortunate because it conveys, at least to the mind of the patient, the idea that a true inflammatory process is present. As a matter of fact it is a degenerative rather than an inflammatory process, and the hyperemia, congestion, and swelling which are so characteristic of acute inflammatory processes are entirely absent. It is also important that a nice distinction shall be made between the process which is present in chronic parenchymatous nephritis and in chronic interstitial nephritis. In the first, as its name implies, there is a degenerative change which primarily and severely affects the secreting epithelium of the kidneys, both in the Malpighian tufts and in the uriniferous tubules. In the interstitial form, on the contrary, as its name implies, there is a marked overgrowth of the connective tissue. The degenerative changes in the secreting epithelium are far more gradual, and it is possible for the kidney to carry out its function sufficiently well to permit of a normal, or fairly normal, existence throughout a period of many years, whereas in chronic parenchymatous nephritis the duration of life is rather that of months than years when the lesions are well established.

These two conditions, therefore, differ materially from the prognostic standpoint as well as from a pathological standpoint, and this difference, to a considerable extent, influences the treatment which may be instituted. It is, however, important to remember that there are no drugs, nor is there any method of dietetic treatment, capable of curing either one of these forms of degeneration in the kidney. The most that we can do is to prescribe methods of life, habit as to diet, and suitable drugs, in the hope that the process may be delayed or held in check. Possibly it may be fairly said that from a therapeutic standpoint we can do more to control symptoms and complications than we can to influence the morbid process itself.

In both forms of chronic nephritis there can be no doubt that climatic treatment is of very distinct service, unless the lesions are so far advanced that the duration of life is very limited. The avoidance of exposure to great cold, and particularly the avoidance of cold associated with dampness, is to be insisted upon, since these factors by chilling the surface of the body not only arrest the function of the skin, but also contract the peripheral capillaries so as to drive the

blood to the internal viscera. They also induce a rise of blood-pressure through diminishing the area of the cutaneous blood-vessels. So, too, excessive exercise in the search of health carried to the point of undue fatigue diminishes vital resistance and so aids in the pathological process; or worse still, the diminution in vital resistance lays the patient open to some infection which seizes the opportunity to attack him, with the result that he is subjected to an acute illness which is not only grave in itself, but is also a serious matter in that the infection produces toxic materials which the impaired kidneys are called upon to eliminate. Furthermore, these toxic materials, by irritating the kidneys, impair the function of the epithelial cells which are as yet not attacked by the primary disease.

In regard to diet I believe that the older theories concerning the avoidance of all meat and the ingestion of large quantities of milk are, to a great extent, erroneous, although they are still largely followed. It is quite true that foods which are difficult of digestion and assimilation are not to be taken, since they not only throw a burden upon the digestive apparatus but result in the production of substances which the kidneys find it difficult to get rid of. It is also quite true that various forms of game, which are usually kept until they become somewhat tender and possess a peculiar taste or flavor as a result of early putrefactive changes, are distinctly harmful. So, too, the various soups which are often concentrated solutions of meat extractives are to be avoided, since some of these soups may almost be considered identical in their composition with urine itself. Possibly the most deleterious of the soups for the nephritic patients are the so-called green turtle and mock turtle soups, and this is particularly true in those cases of either form of nephritis in which the patient is also suffering from lithemia or gouty manifestations.

That ordinary red meat, taken in moderation, is harmful is, I believe, very doubtful. Indeed, I am inclined to think that in many instances the removal of red meat from the diet list interferes with the patient's nutrition, diminishes his vital resistance, and in no way exerts a beneficial effect. Furthermore, I am quite positive that red meats, if they are fresh, are no more harmful than so-called white meat. Although there is a wide-spread belief to the contrary, it is not based upon any sound scientific fact.

The institution of a rigid milk diet, which is so often resorted to, also seems to me to be an error. It is quite impossible for an individual, who is not at rest in bed, to obtain from a rigid milk diet a sufficient amount of nourishment to keep up his nutritive balance. Indeed, he does not receive a sufficient number of heat units unless he takes somewhere in the neighborhood of five quarts a day—an amount which burdens his stomach with fluid and throws upon his kidneys the labor of excreting an enormous amount of liquid. A rigid milk diet also makes many persons bilious, induces intestinal putrefaction, and upsets metabolism. Furthermore, the institution of a rigid milk diet deprives the patient of a class of foods which are most important for his proper nutrition, namely, the carbohydrates, against which nothing can be brought, as can possibly be brought forward in the case of red meats, which carbohydrates give him energy, provide him with body heat, and maintain his general nutrition. Many forms of starchy foods contain enough vegetable albumen, in addition to starch, to provide a diet wholly competent for complete nutrition, and therefore better for the patient than the albuminous diet afforded by milk.

The use of skimmed milk is certainly unnecessary and unwise since the cream of ordinary milk, being a hydrocarbon, provides the patient with one of the articles of food which he always needs in health to maintain his nutritive balance. Of course, there may be instances in which an individual is unable to digest fats, and in such a case skimmed milk may be necessary.

These remarks in regard to diet hold true with peculiar force in cases of

parenchymatous nephritis, for while, on the one hand, the disease is more active and tends to a fatal termination comparatively early, on the other hand this fatal termination is inevitable, and I fail to see why a patient who has only a comparatively short time to live should be deprived of every form of food which is attractive, and be harassed by anxious members of his family who are continually warning him against the ingestion of some article which is not upon his diet list. The mental effect produced by a rigid diet list is often far more deleterious in its influence upon the general health than can be counterbalanced by the avoidance of articles of food of the simple variety which every adult knows to be easy of digestion and assimilation.

I should have pointed out earlier in the clinic the additional fact that while for descriptive purposes we can divide chronic nephritis into the parenchymatous and interstitial form, it is not to be forgotten that in actual practice there is always some parenchymatous degeneration in interstitial nephritis and always some interstitial change in parenchymatous nephritis, and when these two conditions are nearly equal we have that by no means rare condition known as chronic diffuse nephritis, in which the conditions and the symptoms partake of both forms of the disease.

It being admitted that we can do little to arrest the degenerative changes in the kidneys, it is not admitted that we cannot benefit or allay associated changes or symptoms. The most important of these are connected with the cardiovascular system, and the most frequent of them is that which is characterized by a gradually increasing rise in arterial pressure, which rise is due in part to spasm of the muscular walls of the arterioles and in part to an arteriocapillary fibrosis. In some instances, particularly early in the disease, the rise of pressure seems to be due almost entirely to spasm, and it is in this type that we can do most by remedial measures. These remedial measures consist, first in order of importance, in the use of electric cabinet baths, or, if these are not to be obtained, in hot-air baths in which the patient's head is not subjected to the heat but is kept cool by cold compresses. These baths certainly lower blood-pressure markedly when it is due to spasm. Part of this lowering is due to the wide dilatation of the cutaneous blood-vessels, part is due to the relaxing effect of heat, and in all probability these baths also influence metabolism so that toxic materials are not made, or if formed are more readily eliminated than under ordinary circumstances. Whether these baths actually aid in the elimination of poisonous materials through the skin is a matter of doubt, at least so far as the quantity being large enough to be beneficial is concerned. In some of these cases, too, the daily exposure of the patient to the high-frequency current not only results in a considerable fall in blood-pressure during the treatment, but in the course of weeks gradually lowers it so that a gain of fifteen or twenty points of pressure may be obtained. This lowering of pressure is of advantage in that it relieves the heart of much labor and probably tends to arrest degenerative changes in the vessels themselves.

Concerning the use of drugs which lower blood-pressure there are, of course, only two classes: the various nitrites and the iodides. Neither of these classes are of much value if fibrosis is more largely responsible for high pressure than is spasm. Where fibrosis is the dominant factor the nitrites are practically useless, and the iodides are of value not because they are vascular relaxants but because they control nutritional changes in some way not understood, and so more or less indirectly remove the exciting cause of the blood-pressure or influence the pathological lesion in the vascular walls. Although at one time the nitrites were very largely employed in the conditions we are considering, I think it is fair to state that they are not regarded at the present time so favorably: first, because increasing experience has shown that they do not materially delay the advance of the disease, and, secondly, because they are so

fleeting in their action, comparatively speaking, that they cannot be taken sufficiently frequently to permanently maintain a lowered blood-pressure without causing the patient much annoyance because of the frequency of the dose or because of the headache which their constant use induces. Probably it is fair to state that the best use of the nitrites, under these circumstances, is in those instances in which the heart muscle is not only enfeebled by reason of the renal disease which results in some degeneration of its fibers, but is also fatigued by having to force the blood continually through blood paths which are unduly narrow and unyielding.

If the patient has attacks of cardiac distress or pain, either while ingesting food or on exercise, the nitrites should be given to relieve the heart of burden at such a time and to rest it between the periods when it is called upon to do additional labor. One of the best ways of having the patient use the nitrites is to give him some hypodermic tablets of 1/100 grain of nitroglycerin, with instructions to dissolve a tablet in his mouth if any evidence of cardiac distress develops at any time. The drug is absorbed with great rapidity from the mouth, and it is not necessary to attempt to swallow the tablet. For continuous use throughout the day sodium nitrite may be of use in one- or two-grain doses, and it will be found to agree with the stomach much better if to each capsule, or konseal, from three to five grains of bicarbonate of soda are added.

The iodides of choice are, I think, first, a good syrup of hydriodic acid in doses varying from a dessertspoonful to a tablespoonful four or five times a day, well diluted, and taken an hour after meals. In other cases, ten or fifteen grains of iodide of strontium or sodium may be given with advantage after the same lapse of time after meals, but at no time should any of the iodides be pushed to the point at which they disorder the stomach, or to the point where in the elimination of the iodine the kidneys are irritated.

If the blood-pressure is high and cardiac symptoms are present, and the physician finds on auscultating the heart that the first sound is weak and the aortic second sound accentuated, it is essential that he shall order the patient to rest as much as possible in bed, that the nitrites or iodides should be used as already directed, and small doses of strophanthus or digitalis and nux vomica given. In some of these instances arsenic seems useful if given in minute tonic, non-irritating doses, and the old-fashioned Donovan's solution may sometimes be employed with advantage if the renal condition is very chronic and there are no red blood cells in the urine.

In dealing with the matter of an abnormally high blood-pressure it is of vital importance that the physician should not attempt to lower the pressure unless the heart is manifestly greatly fatigued, because, in many instances, the blood-pressure, which is abnormally high for a man in health, is distinctly compensatory in its nature, is essential to comfort and to the functioning of various organs, since a lower pressure will not permit the tissues of the body to be adequately supplied with blood. I have already referred to the value of the electric cabinet baths in these cases. If the first sound of the heart is very weak, either their use should be postponed until by rest and proper treatment the quality of this sound improves, or the electric cabinet should not be used at all.

Many of these patients complain at times of vertigo and dizziness. These symptoms nearly always demand rest in bed. They may be due to accumulating poisons in the body, to failure of the heart when some additional strain is thrown upon it by difficult digestion or exercise, or they may be due to some disorder of the cerebral circulation or in the semicircular canals which we do not understand. Free purgation with some one of the salines, rest in bed, the use of moderate doses of digitalis and strychnine, will often put aside these symptoms. Another condition sometimes met with in chronic nephritis is subacute or chronic bronchitis, a condition often treated as a primary one by means of expec-

torants because the physician does not carefully examine the urine. If such an examination were made, it would immediately become evident that a nephritis was the cause of the bronchitis. Here, again, rest in bed and the use of cardiac tonics is usually essential to produce relief, and if the renal condition has been sharply accentuated by exposure, dry cups placed over the bases of the lungs and over the kidneys may be very advantageous.

Concerning the value of bloodletting, it seems to me that this measure should be chiefly confined to those cases of uremia, or threatened uremia, in which there is dilatation of the right side of the heart, marked congestion of the venous system, and cyanosis. To bleed the nephritic in the absence of such evidence of mechanical obstruction in the venous system, in my experience, is rarely advantageous and deprives him of blood, thereby adding to the anemia which is so often an important factor in the parenchymatous form of the disease.

Lastly, I fear I may be considered an iconoclast if I condemn the general use of Basham's mixture in these cases. If the kidney epithelium is so diseased that it fails to secrete urine, it is hard to believe that so gentle a diuretic as Basham's mixture can stimulate it to increased endeavor. If a mere diuretic effect is needed, the ordinary liquor ammonium acetatis would be equally efficient, and the patient's digestion will not be destroyed by the ingestion of large amounts of iron which are far in excess of the needs of the body at any time and which are prone to produce constipation, a condition most undesirable, and which also is liable to induce fulness of the head or headache in many patients.

Alcoholic beverages, in general terms, are to be prohibited, but where a patient has been accustomed to the use of whisky it is usually best to allow him to continue it or even to order it for him, if it agrees with him, since by burning it up in his body he gains energy, and unless he takes it in excess, so that the alcohol has to be eliminated by the kidneys, it is not harmful. If urinary secretion is scanty, a dry gin to which has been added a little lime juice and sparkling water may be used as a refreshing and stimulating drink and as a diuretic.

NOTE ON THE MANAGEMENT OF INVETERATE PSORIASIS; WITH SPECIAL REFERENCE TO THE CHRONIC, INDURATED PLAQUES.

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To publish a paper on the treatment of psoriasis without offering some new and useful suggestions in therapy is to carry coal to Newcastle. The literature abounds with monographs on the subject; the textbooks render page after page of excellent suggestions which are often so numerous and varying that the beginner is at a loss to determine which one he ought to tackle first, or which one is most likely to do his patient good. Often he throws his textbook aside, discouraged by the plethora of remedies "good for psoriasis." And yet, despite the reams upon reams of printed paper devoted to psoriasis, despite the remarkable work recently published by Schamberg and his collaborators,[1] we still treat the disease in a purely empirical manner; for the real *cause* of the disease is shrouded in as much obscurity to-day as it was hundreds of years ago.

The writer is unfortunately unable, in what follows, to offer anything essentially new in the treatment of psoriasis; he hopes merely to call attention to and to emphasize certain phases of the treatment, in its bearing on the chronic, rebellious, and inveterate

[1] Schamberg, Jay F.; Kolmer, J. A.; Ringer, A. I.; Raiziss, G. W.: Research Studies in Psoriasis. *Jour. Cutan. Dis.*, Oct. and Nov., 1913.

patches of psoriasis which are so frequently encountered by the specialist as well as the general practitioner.

The management of the *ordinary* types of psoriatic eruptions is a comparatively simple matter and may be successfully carried out by every physician, provided he is aided by the intelligent coöperation of the patient. Outbreaks of the disease which will not yield to ointments of ammoniated mercury, salicylic acid, tar, or chrysarobin —or combinations of these—are few and far between. But the same cannot be said of certain chronic and persistent, infiltrated and inflamed patches which frequently occur in this disease. We oftentimes encounter cases, or read of cases, in which the most assiduous and painstaking treatment seems to be of no avail, in attempts to rid the patient, if only temporarily, of his eruption. Such cases usually present one or more large, discoid, indurated, and board-like, somewhat raised, inflamed and scaly patches of psoriasis, apparently embedded into and forming a part of the integument. Such patches may persist with remarkable stubbornness for months and even years, without showing the slightest tendency toward spontaneous retrogression, despite careful internal and external treatment, even at the hands of experts. The entire back, or the entire abdomen, may be the seat of one such extensive plaque. We meet with cases of this type frequently in dispensary practice, and often enough in private practice as well.

Patients of this type have usually run the entire gamut of local treatments, from "poslam" and "cuticura ointment" to radiotherapy and actinotherapy. In most of them almost any fatty application will cause a temporary softening of the affected regions, a retardation of the symptoms of inflammation and desquamation, with a prompt return to the original state of affairs as soon as treatment is neglected. In others, all remedies, ancient as well as modern, seem powerless. The writer has under his care a patient who bears the indelible scars of nitric acid cauterizations, which had been applied to obstinate psoriatic patches on the chest and forehead, after less heroic forms of treatment had failed to eradicate the lesions. This, of course, represents an extreme example of therapeutic mismanagement on the part of the medical attendant.

We read a good deal, these days, of the treatment of psoriasis with *x*-rays, Kromayer light, various electrical currents, etc. The Germans, especially, favor these therapeutic agents in the chronic and recalcitrant cases. The writer employs these valuable therapeutic agents in many obstinate dermatoses, but has not, as yet, been obliged to resort to any form of light-therapy or electrotherapy—which, like all other forms of treatment, are merely palliative—in the successful treatment of most obstinate cases of psoriasis.

During his interneship at one of the local hospitals, the writer was frequently struck by the fact that among the ward patients afflicted with psoriasis there were always two or three who seemed to spend the greater part of the day in the monotonous occupation of rubbing chrysarobin ointment into their skins. They resigned themselves, with obvious indifference, to the nurse's daily ministrations, consisting of a more or less perfunctory, five or ten minutes' inunction with salves. Their real work began where the nurse's ended. Questioning these patients elicited the information that their own experience had shown them how best to expedite the removal of the obstinate patches of the disease—in short, they discovered that the longer the inunctions were carried out and the more diligently the chrysarobin salve was rubbed in, the sooner would their skins become rid of the psoriatic plaques. As a matter of fact, the short stay in the hospital which these knowing patients required, as compared to the number of hospital days among the lazier or more indifferent psoriatics, was indeed striking and left a permanent impression on the writer's mind, in connection with this class of cases.

There are two methods of employing external applications in the treatment of psoriasis. The first consists of the ordinary

modes of application—the painting on of lotions, emulsions, collodion and chloroform mixtures, traumaticin preparations, etc., and the smearing on of ointments, pastes, oils, etc. This method does not interest us here, as it applies to ordinary cases only. The second method is a totally different one, both in technique and therapeutic results. It consists of the patient, diligent, vigorous, and long-continued "rubbing in" of a chrysarobin ointment to the chronic, infiltrated patches described above. The difference in the therapeutic effects obtained by these two methods is quite remarkable. The first method, the ordinary and perfunctory application of ointments and fluid mixtures, is merely a waste of time in the indurated plaques of the disease. The second method, on the other hand, if correctly employed, almost invariably results in the disappearance of the most rebellious patches of this obstinate dermatosis.

It is the writer's conviction, based on personal experience, that *every patch of chronic psoriasis will yield to a good chrysarobin ointment, within a reasonable length of time, provided it is properly applied.*

Let us assume that we are to undertake the treatment of a man who has been suffering with psoriasis for a number of years —say ten years. His eruption is now more or less generalized. Most of the patches disappear under the ordinary forms of internal and external therapy. One or more large, inflamed, thickened and scaly patches, however, situated on the abdomen or the back, or over the sacrum, seem to resist all ordinary methods of treatment. What should we do here?

1. Removal of the scales. This may be accomplished by a dressing of soft soap, to which has been added salicylic acid, from five- to ten-per-cent strength. Sometimes the application of Lassar's paste, with a little olive oil (about a drachm to the ounce of paste) in which five per cent of salicylic acid is incorporated, answers the purpose. Or an ordinary olive oil or vaselin dressing may suffice. Such a dressing is to be bandaged snugly over the affected parts and allowed to remain from twenty-four to forty-eight hours. After the scales have been loosened and removed, usually there will be left a red, inflamed, raised, somewhat angry-looking patch of skin. Should this inflammation appear to be intense, it must be allayed with a weak Burrow's solution or the well-known calamine lotion. The acute inflammatory symptoms having subsided, the next step is:

2. Inunction of chrysarobin ointment. To the patch (which may vary in size from a silver dollar to a soup plate or larger) the following ointment is to be applied by *vigorous rubbing:*

℞ Ol. rusci, 10;
Acid. salicyl., 20;
Chrysarobin, 20;
Lanolin (anhydrous), 25;
Sapon. mol., 25.
M. et ft. ungt. Sig.: Rub in vigorously.

This is called Dreuw's ointment, after the Berlin dermatologist who first proposed the combination. The proportions of the various ingredients may be altered to suit individual cases. Ichthyol in the strength of ten per cent may be added in cases in which the susceptibility to inflammation seems to be a marked feature. If itching and burning are present, menthol, three grains to the ounce of ointment, may be incorporated.

This ointment is to be rubbed in, twice daily, morning and evening, by a competent nurse, masseur, or bath rubber. The technique of inunction is important. The salve must be applied either with a stiff-bristled brush (the bristles to be not more than a half-inch in length) or, as we advise our dispensary patients, by using several thicknesses of flannel, wrapped tightly around the head of a clothes-pin. The rubbing must be vigorous, without being rough, and should be applied with a circular motion, the time of inunction varying from a quarter to a half-hour on each patch. The question of time must be left to the discretion of the medical attendant; its length depends upon the depth of the infiltration, the chronicity of the patch, the susceptibility of the

patient to chrysarobin dermatitis, and the quality of the chrysarobin itself.

Chrysarobin is a substance which, as G. H. Fox has often mentioned, notoriously varies in quality and strength. A sample obtained from one source may be practically innocuous to the patient's skin, while from another source it may set up an intense dermatitis, even if used in the strength of one to five per cent. It is therefore advisable that the physician acquaint himself beforehand with the strength of the chrysarobin he is prescribing. With good materials, the proportion of the chrysarobin in Dreuw's ointment may be varied from five to twenty per cent.

The nurse or attendant must be careful to limit the application of the ointment to the diseased patch and must try not to encroach on the healthy skin surrounding it. More or less peripheral inflammation, due to the chrysarobin, is unavoidable and not harmful.

Should the first one or two inunctions set up a marked dermatitis, accompanied by a more or less disagreeable sensation of burning or itching, the ointment must be withheld, and the following lotion should be substituted until the inflammatory symptoms subside:

℞ Phenol, ʒj;
Menthol, gr. iv;
Prepared calamine, ʒij;
Zinc oxide, ʒiij;
Glycerin, ʒj;
Lime water, ℥j;
Rose water, q. s. ad ℥iv.

M. et ft. lotio. Sig.: Apply frequently or use as a wet dressing.

Should another trial of the ointment prove that the patient's susceptibility to chrysarobin is quite manifest, the proportion of the drug in Dreuw's combination must be reduced, until the reaction caused by it is only a moderate one, instead of being severe. In most cases it is not necessary to apply the above antipruritic lotion; it suffices to withhold the ointment for a day or two, permitting the inflammation to take care of itself; or, to add to the patient's comfort, a wet dressing of boric acid solution may be applied during the intervals between inunctions.

Staining of linen is, of course, inevitable where chrysarobin ointment is employed, but the majority of patients consider this a negligible item. An impervious dressing should never be placed over a patch of skin covered with a chrysarobin ointment; a loose gauze dressing, acting as a barrier against the staining of linen, is sufficient.

With the treatment as outlined, the number of days required to eradicate a patch of chronic, indurated psoriasis is, of course, variable. Broadly speaking, a patch varying in size from a man's palm to one occupying the entire lumbar region of the back requires from three to ten days' treatment—seldom more. In the most obstinate cases the affected area, after a few inunctions, assumes a lighter color, becomes softer to the touch, and finally acquires the normal appearance of the healthy portions of the skin. The surrounding chrysarobin dermatitis may either be left to take care of itself, or, if it gives rise to discomfort, may be treated with any sedative dressing, such as the calamine lotion.

In conclusion, the writer reiterates his opinion that patches of psoriasis which will resist the well-directed onslaughts of chrysarobin ointment must be classed among the rarer dermatoses. Indeed, he is tempted to make the paradoxical statement that if a patch of psoriasis does not yield to chrysarobin ointment—properly applied—it is not psoriasis.

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PITUITRIN IN INTESTINAL PARESIS FOLLOWING ABDOMINAL OPERATIONS.

Writing on this topic in *Surgery, Gynecology and Obstetrics* for June, 1914, Stanley points out that pituitrin has been extensively used, recommended, and its results reported in obstetric practice. He has searched for literature giving definite results of its use in cases of intestinal paresis following abdominal operations in which there has been extensive manipula-

tion of the viscera. The manufacturers include this condition in their list of indications for the use of pituitrin, but furnish no definite statistics.

It has been frequently observed in obstetric practice that soon after its administration there is often micturition and sometimes defecation, and there is difficulty in stating whether these functions are caused by the action of the pituitrin or the pressure of the oncoming head.

However, he has noticed bowel movements following the injection of pituitrin, after the placenta was delivered. His purpose in reporting three cases is merely an attempt to stimulate reports from other physicians who have had greater opportunity to observe effects of the drug.

Case 1.—Female, aged nineteen. Operation, double salpingectomy. Many adhesions were found in the pelvis, involving a considerable area of intestine. Thirty-six hours after the operation she developed intestinal obstruction. Again the abdomen was opened, and the adhesions causing the obstruction were broken. Both operations required much manipulation of the gut. A few hours following the second operation the patient's belly became greatly distended, and all methods of obtaining expulsion of gas failed. The rectal tube was passed, suds enemata, high saline enemata, and enemata of molasses, and milk and turpentine were given, without result. Physostigmine, hypodermically, failed to help. Hot turpentine stupes were applied to the abdomen. At this stage 1 Cc. of pituitrin was given hypodermically and repeated every hour. Before the second injection the patient expelled a small amount of gas. After the second injection she had a large fecal movement and expelled a large amount of gas. Treatment was continued for six hours. Patient made an uneventful recovery.

Case 2.—Male, aged twenty-four. Operated upon for appendicitis. The appendix was buried in a mass of old adhesions and required much manipulation to free it. Ten hours following the operation the abdomen became greatly distended with gas, which did not respond to enemata. One Cc. of pituitrin was given, and fifteen minutes later the patient expelled a large amount of gas. After the second injection there was a fecal movement. Only three injections were necessary.

Case 3.—Woman, aged forty-five. Operated on for ventral hernia following abdominal section for an ovarian cyst. There were many adhesions of the intestine to the parietal peritoneum. Fourteen hours after operation the bowel became greatly distended and injections of pituitrin were begun. After the third injection the patient began to expel gas and had no further difficulty.

It is evident that one must be sure that the intestine is not obstructed by firm adhesions or other abnormal growths. For this reason it is advisable to begin the administration of pituitrin soon after the operation before adhesions have had time to become firm.

URINARY ANTISEPTICS.

In concluding an article on this subject in the *Edinburgh Medical Journal* for June, 1914, WALKER makes the following statements:

1. The dosage of urotropin should be increased until an antiseptic action is obtained or the limits of tolerance are reached.

2. The reaction of the urine should be carefully tested, and the acidity if necessary raised by means of drugs until the point of dissociation of urotropin is reached.

3. Diuretics and diuretic waters interfere with the splitting of urotropin and should be avoided during its administration.

4. The Rimini-Burnam test for formaldehyde should be in constant use when urotropin is being administered.

5. Urinary antiseptics of the formaldehyde series are harmful or useless: (*a*) In very acute inflammation of the urinary organs; (*b*) in pure tuberculous infection of the urinary organs; (*c*) when the urine is alkaline.

EDITORIAL.

INTERNAL SECRETIONS, WITH ESPECIAL REFERENCE TO ADRENALIN.

The remarkable powers exercised by the various glands which carry on internal secretion afford a fertile field for physiological, pharmacological, and therapeutic research. The extraordinary influence exercised by adrenalin upon capillary networks is being found to be one of its least important attributes. It would seem that by the study of the internal secretions we are rapidly gaining not only definite knowledge as to their action but a better conception of a number of physiological functions in portions of the body where ignorance has heretofore held sway. As Hoskins says, in an interesting article which has recently appeared, "although the last word in regard to the functions of the adrenals has by no means been said, enough evidence has accumulated to justify certain conclusions which will probably stand the test of further research." He points out that adrenal secretion has a remarkable selective affinity for portions of the sympathetic nervous system, a system which heretofore has been largely a *terra incognito.* When an organ has a sympathetic nerve supply adrenalin seems to always influence it, whereas if it has no such supply adrenalin seems to be powerless. Where the functions of the sympathetic end organs, or so-called receptive substances, are associated with increased activity of an organ, adrenalin stimulates such activity, and where their function is to exercise a sedative influence adrenalin increases their functional efficiency. As the sympathetic nervous system exercises control over a number of important vital processes, adrenal secretion, therefore, is a most important factor in life, and when it is recalled that adrenalin in the proportion of one grain in 1500 gallons of fluid is capable of exercising an influence on a strip of isolated muscle from the intestine, some conception of its powers may be obtained.

It is probable, too, that the amount of adrenalin secretion is governed by a number of factors. Thus, it has been shown that the checking of intestinal peristalsis, often associated with profound emotion, is apparently due to an increased adrenal discharge due to this nervous cause. Hoskins goes so far as to state that the adrenal secretion aids the body in conditions when aid is immediately necessary. It increases the activity of striped muscle, and by the inactivity of the intestinal contents, which it induces, it provides the voluntary muscles, the heart, and the respiratory centers with large amounts of blood when active muscular effort is necessary to combat or to escape danger.

Not only is this true, but the increased secretion of adrenalin under these circumstances results in the setting free of an increased quantity of dextrose in the blood, thereby providing the muscles which are being actively exercised with an increased amount of material with which to develop energy. Hoskins also thinks that the dilatation of the peripheral bronchioles induced by adrenalin, which has so useful an effect in cases of asthma, is an advantage in the presence of severe muscular effort in that it opens the respiratory passages more widely and therefore aids the respiratory function.

Cannon and Nice, as well as Gruber, have found that the efficiency of a fatigued muscle and its recovery from fatigue are greatly hastened by the injection of adrenalin, and Cannon even suggests that the pains of labor are of direct use to the mother in that they result in adrenal discharge, increasing her muscular efficiency and inducing uterine contraction. Possibly the condition of an excess of dextrose in the blood when the adrenals are freely secreting is the reason why diabetics increase their sugar output when suffering from emotional disturbance or nervous strain, and possibly this increase in adrenal secretion is responsible for increases in blood-pressure in cases of arteriosclerosis

or arterial spasm, the result of which may be cerebral disaster or cardiac strain. The chief objection to this latter theory is that very small doses of adrenalin have been found to lower blood-pressure rather than to raise it, and it is probable that the amount of adrenalin secreted at any one time is almost infinitesimal as compared to the quantities which are given intravenously or hypodermically by the physician or surgeon.

It must not be forgotten, however, that like other glands concerned with internal secretion, the adrenals apparently secrete two substances which in one sense are antagonistic or at least differ in their action. Up to the present time the use of adrenalin in animals suffering from extirpation of the adrenals has not served to save life, nor has it proved of value when these glands are suffering from disease in the human being.

Finally, we believe that further investigation will reveal that there is, in political parlance, an "interlocking directorate" between all the internal secretions, and until this interlocking directorate is better understood, a large part of our employment of extracts obtained from the glands of internal secretions must continue to be largely experimental.

THE EARLY TREATMENT OF SYPHILIS.

It is not our intention in this leading article to discuss in detail the well-worn subject of the excision of chancre nor the question as to how early mercurial treatment should be thoroughly instituted. These subjects may in a way be considered as being fairly well settled, as may also the question as to the advantage of using salvarsan as soon as the diagnosis is assured. The recognition of the fact that the spirochæta pallida is the cause of syphilis, and the further discovery that it can be found in a suspected lesion with comparative ease, enables us to reach a definite diagnosis and institute thorough treatment in cases in which heretofore, because of uncertainty, we thought it unwise to start early the free use of a mercurial

Either because the virulence of the infection is diminishing or because the race is developing a comparative degree of immunity, syphilis at the present time, so far as acute manifestations are concerned, seems to be a less violent and death-dealing malady than in years gone by. On the other hand, there is no question that its late manifestations in the nervous system produce an amount of suffering, mental and physical, which is beyond computation, and these symptoms in the majority of cases develop so long after the infection that the punishment seems peculiarly severe.

Only a few years ago it was universally taught, by those who thought they knew most about the matter, that paresis and locomotor ataxia, and other late manifestations of an earlier syphilitic infection, were not to be considered actually syphilitic, but rather the result of the presence at an earlier date of the disease in an active form. The discovery by Noguchi and others that this is a mistaken view and that the spirochæta pallida can practically always be found in the perivascular tissues in cases of paresis and ataxia has completely changed our conception of the pathology of the disease and of the treatment which should be instituted.

The pages of the THERAPEUTIC GAZETTE have frequently during the last few months discussed the treatment of nervous syphilis by the intraspinal injection of salvarsan. It is not necessary, therefore, for us at this time to discuss this theory or this technique. The point which we wish to emphasize is that infection of the nervous tissues probably occurs as early as infection of any other part of the body, and that when salvarsan has been given intravenously on repeated occasions until the Wassermann test is negative, it is still the duty of the physician to go a step further and to examine the cerebrospinal fluid, not only by means of the Wassermann test, but by the additional tests, which consist in determining the number of lymphocytes in

this fluid and the quantity of globulin which it contains. In other words, the blood report may be negative, but the cerebrospinal fluid report may be positive, the intravenous injection having failed to attack the infection which involves the nervous system.

Another point of importance, if the patient is to escape the disastrous consequences of nervous syphilis, is the recognition of the fact that it is not necessary for years to pass before the nervous manifestations commence. It is quite true that not infrequently an infection at twenty is not followed by ataxia until the age of forty or forty-five, but it is also true that in some instances the nervous symptoms develop in as many months instead of in as many years. And again it is true that, if they are to be treated successfully, they must be recognized at the earliest possible moment, since it not infrequently happens that when a diagnosis of nervous syphilis is reached, because of symptoms, the lesions in the nervous system have already advanced to such a point as to be beyond relief, although further advance in the destructive process may be brought about by active interference.

To put the matter in a concrete form, the day is at hand when the physician who is treating a case of syphilis should not be content with a disappearance of superficial lesions, and a negative Wassermann reaction in the blood, but should examine the cerebrospinal fluid to determine whether his therapeutic measures have attacked the disease as efficiently in the nervous system as elsewhere. The importance of this becomes still more manifest when we recall the fact that far-advanced cardiovascular-renal disease contraindicates the use of salvarsan and certainly makes us cautious in the administration of adequate doses of mercury. Furthermore, the rapid destruction of large numbers of the spirochæta pallida by the use of salvarsan sets free so great an amount of poisonous material that the nervous centers may be overwhelmed, particularly if they are already impaired as to their vitality by having been exposed to the disease for many years.

It seems to be the opinion of many syphilographers that in gummatous lesions mercury is fully as efficient, if not more efficient, than is salvarsan, and it would appear that the iodides are of value in syphilis in all probability not so much because they exercise any influence upon the spirochæta as do mercury and salvarsan, but because they aid in dissipation or in the absorption of inflammatory exudates just as they act when we employ them to clear up the results of inflammation due to other causes.

For many years to come physicians will constantly meet with cases of paresis and ataxia because many years must pass before the infections of the last two decades can be wiped out by time, but if the physicians of the present day recognize clearly that not only must the spirochætæ be attacked in general, but also especially in their hiding places in the nervous system, it is not too much to hope that a very large number of patients will be saved from lives of misery and that the number of inmates of insane asylums will be greatly diminished.

THE TREATMENT OF NUTRITIONAL DISORDERS IN INFANCY.

The various investigations which have been made in this country and abroad during the last twenty years have thrown much light upon a class of cases which are often exceedingly difficult to successfully deal with. Since Booker's original investigation twenty-five years ago an enormous amount of bacteriological study has filled the journals. At first the endeavor was to give food which would be less favorable to the growth of these newly recognized microorganisms. More recently not only has this plan been carried out, but it has been proved that in certain types of intestinal disorder in infancy other microörganisms which are both benign and curative may be employed, with or without food, in better-

ing the patient. Furthermore, the large amount of attention that has been paid to the preservation of milk supplies has materially decreased the number of instances in which nutritional disorders in infancy occur. Finally, it is not to be forgotten that the ability of an individual child to digest and assimilate a food, which theoretically leaves nothing to be desired, is a factor which has to be considered in every case. This is true not only of the quality but of the quantity of food which the individual can utilize.

An interesting type of arrested nutrition in infancy is seen in those infants whose stools are not particularly abnormal in appearance although they are often unduly dry, light in color, and of a foul odor, with a consistency resembling damp clay or putty. These stools have sometimes been called "soap stools," owing to the large amount of neutral fat which has been replaced by fatty soaps. The light color of these stools is usually thought to be due to a lack of hepatic secretion, but as a matter of fact it depends upon changes in the bile which result in a colorless product. Such cases are to be treated not by the administration of calomel, although the use of this drug, by purging the patient, may afford temporary relief. The small white masses sometimes seen in such stools are not due to curds formed of casein, but to masses of fatty soaps. The ingredient of the feeding bottle which is to be diminished is therefore not casein but fat, and oftentimes if the milk is considerably diluted, whereby both elements are diminished, and the fats supplanted by the addition of some starchy food, the disordered digestion will be corrected.

In some instances the disorder depends upon the use of too large an amount of milk-sugar, an ingredient of milk capable of undergoing fermentation and seemingly somewhat difficult of assimilation in some patients. Sometimes too the free administration of milk-sugar induces an excessive diuresis, and this in turn causes thirst, with a result that the stomach is overloaded with an excessive amount of fluid.

In some cases malt soup is useful. This is prepared as follows:

One and one-half ounces of wheat flour is well mixed with a quart of milk and strained through a fine sieve. Three ounces of Loeflund's malt soup extract with potassium carbonate and a quart of water are mixed, and the two mixtures are then combined and cooked slowly for half an hour, when the mixture is brought to a boil. If the child is as young as three or four months it is best to make the strength of the mixture, both as to extract and flour, one-half the above strength.

In certain cases the use of what is known as Eiweissmilch, or protein milk, proves very useful. This is made by adding rennet to a quart of milk which is maintained at a temperature of about 100° for half an hour. The whey from the curd which is formed is then strained through a cheese-cloth bag without pressure. The curd is then passed through a fine sieve by rubbing it with a spoon, and its passage through the sieve is aided by pouring through the sieve a pint of sterile water. To this mixture of finely divided curds and sterile water is added a pint of good buttermilk and the entire combination brought to the boiling point. Such a mixture when it is shaken contains the curd so minutely subdivided that it looks like ordinary milk. This so-called Eiweissmilch not only provides the child with what may be called a partially predigested food, but is particularly useful, if the buttermilk is pure and is not sterilized by boiling, in those cases in which there is intestinal putrefaction or difficulty in the digestion of the proteids.

THE SURGICAL USE OF THE BONE GRAFT.

In this era of surgical progress the tolerance of tissue toward foreign bodies, providing these be germ-free and the vitality of the region in which they are implanted is not too seriously lowered by prolonged exposure or excessive trauma, is so well established that the surgeon with the proper

technique hesitates not at all to leave within the body splints for support or foreign matter for cosmetic purposes, realizing that he can be well assured of the prompt healing; but not always considering that such foreign material may after a primary healing give later trouble, such trouble developing either spontaneously or as the result of trauma months or indeed years after the original operation. Moreover, it seems well proven that in direct proportion to the size of the foreign body employed the reparative processes about its site of implantation are retarded. Hence the use, where splints or supports are needful, of living tissue taken from the patient himself as shown by the success of fat implants, of fascia grafts, and as is particularly demonstrated by the employment of bone grafts, which Albee more than any other has developed as a serviceable procedure in many lines of surgical work. Indeed, he notes that he has had an experience gained from 253 human bone cases over a period of two years *(Surgery, Gynecology and Obstetrics,* June, 1911), supplemented by a large amount of animal experimentation checked by both microscopic and macroscopic study. This large experience is made up of 178 cases of Pott's disease, 16 wedge-graft corrections in the case of congenital clubfoot, 17 inlay grafts for ununited fractures of the long bones, 14 cases of paralytic foot deformities. The remaining cases include bone-graftings for fixation of tubercular ankle, repair of osteomyelitic cavities, transplanting astragalus for absent head and neck of femur, the correction of paralytic drop-wrist, deformity of the tibia following fracture, underdevelopment of the jaw, fixation of tubercular knee, reënforcing the bony deficiency and muscular weakness in spina bifida, in conjunction with arthroplasty for paralytic dislocation of the hip, congenital dislocation of the hip, paralytic scoliosis, restoring depressed nasal bridge, fixation of tubercular sacroiliac joint, ununited fracture of the spine, ununited fracture of the femoral neck, congenital absence of tibia, replacing bone deficiency following removal of osteosarcoma, mobilizing ankylosed hips and carpus by the use of osteocartilaginous grafts.

Albee holds that his earlier cases have proved the permanency of the graft and the result up to three years, and as other observers have followed bone-grafts even as long as thirty years, he believes that the reliability and permanency of the bone-graft has been sufficiently proven. The periosteum on the graft plays an important rôle in aiding to establish a more abundant and earlier blood supply or nutrition to the graft, and the endosteum and the marrow substance also serve a similar purpose, either acting as a ready medium through which the bone transplant gets its nutrition, or in case the bone in the graft dies, furnishing living active cells through which the graft is regenerated.

Moreover, bone-grafts stimulate an active osteogenesis upon the part of the bone itself. Albee gives in the most satisfactory and minute detail his technique in the treatment of Pott's disease of the spine. It is to be noted that he keeps his patient in the recumbent position on a fracture bed for six to eight weeks. After this he is allowed to walk about without apparatus for part of the day. Moreover, he holds that fixation by the bone-graft is indicated in all cases, at all ages, where pain or muscle spasm demands immobilization of the diseased vertebræ, and the earlier the operation the more favorable the prognosis. The only special contraindication is the inability to secure a clean field of operation. Cold abscesses between the spinous processes have not interfered with primary union. The prognosis of operative cases is most favorable as to relief of the symptoms and decrease of deformity. As to tuberculosis of the sacroiliac joint, Albee points out the difficulty of fixing this by any external support. He has succeeded in accomplishing a partial fixation by using the bone-graft, which he states has furnished most satisfactory results.

The posterosuperior spine of the ilium, the wing and first posterior spine of the sacrum are reached by a curved incision. The posterior border of the wing of the

ilium and the spinous process are split, with their attached ligaments, by a thin osteotome, forming a gutter to receive the ends of the graft.

If practical, a surface on the sacrum is denuded to furnish additional contact with the graft. The wound is packed with a saline compress, and, with the patient still in the prone position, the leg is flexed and a graft of sufficient length is removed from the crest of the tibia by the motor saw. The width of the graft should be three times the thickness of the cortex. The thickness should include the whole cortex, periosteum, endosteum, and a small amount of the adhering marrow. The graft is placed in its prepared bed, and the ligaments drawn over it by interrupted sutures of medium kangaroo tendon. The skin wound is closed and the patient placed on his back in a fracture bed, for a period of not less than five weeks. There should be no necessity of further mechanical treatment.

As to ununited fracture, Albee has often said that the Lane plate and other internal metal splints are a hindrance rather than an advantage in securing bony union.

The indications for treatment in fresh fractures and ununited fractures are entirely different, although it is very evident, from the discussion of these problems with various men and the large number of failures seen in our clinics, that many practitioners do not appreciate this difference.

In a large percentage of fresh fractures temporary fixation only is necessary to insure union, as the osteogenetic function of the fragments is active, and in the presence of accurate apposition union occurs rapidly. The proper application of the Lane plate in suitable cases may fulfil all requirements.

In ununited fractures the problem is quite different. We have here in the ends of the fragments a marked diminution or an entire cessation of osteogenetic activity. This cessation of activity is evidenced in the marked sclerosis or eburnation which is always found.

The pathology of this condition of sclerosis is very similar to that found in non-ankylosing osteoarthritis where there is an overdeposit of calcium salts, and a consequent diminution and degeneration of bone-producing cells. The therapeutic requirements of these pseudo-arthroses are fixation, stimulation of osteogenesis on the part of the fragments, and an osteogenetic scaffold connecting the active bone in each fragment back of the eburnated areas. The bone-graft is the only means of fulfilling these requirements. Two, if not all, of these three essentials are necessary in order to secure union.

The Lane plate furnishes but one of these, viz., temporary fixation, but at the same time it causes absorption and disintegration of bone. The bone transplant not only produces fixation but also stimulates callus formation and grows bone on its own part.

Abundant evidence has accumulated to prove that something more than fixation is necessary in these conditions. The most favorable cases for external fixation, such as fracture at the middle third of the tibia, with the fibula intact, have failed to unite in spite of months of effectual splinting and recumbency in bed. Operation showed no interposition of soft tissues, and there was no evident reason for non-union.

Codivilla appreciated the above-mentioned therapeutic requirements and met them partially by spanning the fractured area with a very thin autogenous periosteal graft, which has given in the hands of others a fair percentage of good results. But it was not an ideal procedure, in that it did not furnish efficient fixation, it did not stimulate osteogenesis between the ends of the fragments, because it was entirely superficial, and it did not penetrate cortical bone structure. Being extraosseous, it therefore furnished an imperfect graft environment.

Murphy has evolved a better method in his use of an intramedullary dowel, which furnishes more effectual fixation, and being entirely intraosseous favors stimulation of osteogenesis by better contact of graft to recipient fragments. It is, however, difficult thus to get contact to active bone

beyond the sclerosed area, which is most important. It is also difficult of application in small bones, such as those of the forearm, where the medullary canals are small. As in the case of the intramedullary aluminum splint of Elsberg, it is most difficult to secure the necessary lateral fixation in fragments, in such cases as fractures of the ulna and radius, where these bones have been contractured together during long existing non-union.

Albee gives a complete description of his technique in this class of cases. In the case of fresh fractures, the bone being osteogenetic, the graft material can be taken from the fragments themselves and used to advantage. In Albee's last 100 cases his success has been 100 per cent. Complete union between graft and recipient bone should be in many cases enhanced by interposition of numerous small grafts in which the periosteum may be disregarded because of the easy access of blood supply to their interior osteoblasts. These coalesce with each other and also with the recipient bones and the large graft.

The living bone-graft has certain bacteria-resisting properties, as evidenced by animal experimentation. Moreover, when there is good contact the grafts become immediately adherent to the recipient bone by newly formed tissue, which changes to solid bone within four weeks' time.

SPLENECTOMY FROM THE MEDICAL STANDPOINT.

Surgery has long demonstrated that the removal of an enlarged spleen, provided it be not widely adherent, is not only a comparatively safe and easy procedure, but at the worst is followed by no serious impairment of health, and at the best often by an improvement in the condition of the patient obtainable by no other means. It has shown that the members of a large group of cases roughly classed as Banti's disease, if subject to splenectomy, get well, with a negligible operative mortality, provided the operation be done early; that even in the terminal phase of this disease—*i.e.*, when there is profound anemia, the liver is secondarily enlarged, and ascites is present—cure may be accomplished. To the surgeon, then, a progressive enlargement of the spleen, associated with asthenia and progressive anemia, when no definite cause can be assigned for this condition and when medical and hygienic treatment are unavailing, suggests operation, and it is satisfactory to observe that this suggestion is being taken with increasing willingness by the general practitioner, as shown by the records of cases which appear in the Proceedings of the Royal Society of Medicine, Volume VII, No. 5, 1914.

Whipham records the case of a father and three children who three years previously and at the same time suffered from high fever of a remittent character, from which they all recovered in a few days, but were left distinctly and noticeably anemic. Nor did any of them entirely regain their health. They exhibited no symptoms of sufficient gravity to require the services of a physician until the father was attacked by grippe, and the big spleen was discovered in the course of the routine examination; this led to a further study of the children. Three other children who did not suffer from fever were entirely healthy. All of these patients presented obvious and palpable enlargement of their spleens, and similar blood counts with differential counts almost identical. They all exhibited a rather high percentage of eosinophiles. There was a diminution in the reds, lessened hemoglobin, and high eosinophile count, which could have been explained in the man by the presence of a tapeworm, but not in the children. Whipham asked whether any or all of these patients would be benefited by a splenectomy.

Sargent reports a girl ten years old to whom attention was first attracted by enlargement of the belly partly due to ascites associated with anorexia. Celiotomy was performed on the supposition that the case was one of tubercular peritonitis. Later the spleen was felt, and thereafter rapidly

enlarged until it extended below the umbilicus. There were over four million reds, with a hemoglobin of 40 per cent, color index of 0.5, with marked poikilocytosis and fair number of normoblasts; whites, 2000; the small lymphocytes, 33 per cent; large lymphocytes, 3 per cent. The spleen was removed and found to be extremely friable, weighing a pound. The recovery was uninterrupted, but six weeks later the child suffered from severe hematemesis. The hemoglobin was down to 30 per cent, ghosts, microcytes, and macrocytes present, and many normoblasts. White cells were nearly 30,000. The child improved and was discharged with neither enlargement of the liver nor ascites, the last count showing a normal number of blood cells and no evidence of poikilocytosis.

French reports the case of a boy aged five, who came into the hospital weak, pale, drowsy, and anemic, and suffering from bronchitis. There was a big spleen reaching across to the middle line and down to the iliac crest; the liver was moderately enlarged, smooth, and soft. Whites, 21,000; red corpuscles, 1,900,000; hemoglobin, 20 per cent. The Wassermann reaction was positive, and the patient's sister exhibited a precisely similar malady. Previous to his admission to Guy's Hospital he had been treated by iron, arsenic, mercury, iodide of potassium, salvarsan injections, and the use of the *x*-rays locally over the spleen, but all without any marked benefit. From nine months to five years of age the child had been a frail, yellow, anemic little boy, unable to be long out of bed; his general appearance was that of a patient in an advanced stage of pernicious anemia. The spleen, which weighed 18 ounces, was removed. Thereafter there was an immediate progressive and remarkable change for the better. In two months' time the boy looked perfectly normal. French in commenting upon this, and exhibiting the sister of the boy, expressed the opinion that whatever the name be given to the disease the immediate and remarkable cure that followed splenectomy when everything else had failed indicated the value of this treatment in similar congenital syphilitic cases with big spleens and severe anemia.

Hoffmann reports the case of a girl twelve years old, who at the age of four suddenly vomited half a pint of blood; at the age of six she vomited a pint. At the age of eight she began to have frequent attacks of pain in the stomach and "around the heart." Crops of small purpuric spots appeared upon the chest and she was said to have bruised easily. When she was at the hospital in 1910 melena was noticed on several successive days. The spleen projected 2½ inches below the costal margin, and was indurated. Red cells were 2,425,000; color index, 0.7; leucocytes were 3700. A month of arsenic produced some improvement. Henoch's purpura was diagnosed. The patient remained comparatively well until July, 1911, when she suddenly vomited a pint of blood. This was repeated twice during the next few hours, and melena was seen on nine successive days. The spleen was enlarged and firm as before, and moved freely with respiration. The condition slowly improved under arsenic, and in November, 1911, the red cells numbered 4,328,000 and the color index was 0.8. The liver was just palpable, though not hard. Jaundice had never occurred. She had another large hematemesis on December 18, 1911. The spleen was removed early in January, 1912. Just before operation the reds were 4,400,000, hemoglobin 90 per cent, and leucocytes 3060. The spleen showed perisplenitis and cirrhosis. Cultures were sterile on all media.

In December, 1912, the patient was subjected to tonsillectomy. Since the operation she has been in good health and there has not been any more bleeding. A recent count shows red cells 5,475,000; hemoglobin, 100 per cent.

Bland-Sutton in commenting on these cases spoke of the excellent immediate and remote effects of splenectomy for the relief of the splenic anemia of children.

Gordon Ward advanced arguments in favor of a more designating terminology, believing that the term splenic anemia without any qualifying phrase should be most

strictly reserved for cases which were idiopathic, accompanied by hemorrhages from the stomach, and terminated in cirrhosis of the liver—*i.e.*, in Banti's disease. The cases which are suspected to be syphilitic should be referred to as "syphilitic splenomegaly," while if thrombosis of splenic vessels could at all reasonably be implicated as a causal factor, the case should be called thrombosis with splenomegaly. Weber believed that one practically never saw a typical splenic anemia over a long period without there being leucopenia present. But on the other hand there were many cases of chronic enlargement of the spleen, which were not splenic anemia, but which showed leucopenia. It is an unfortunate fact that antisyphilitic treatment does not in every instance cure children with large spleens and a certain amount of cachexia, who moreover show evidence of congenital syphilis. It is suggestive that the splenic enlargement in these cases is not always actually syphilitic, but that it rises and flourishes on a syphilitic basis. Hutchison, who has seen such cases under his care, had declared at a meeting of the Section for the Study of Disease in Children that if he had similar cases again, on a syphilitic basis, and a cachexia not yielding to treatment, he would have the spleen removed.

Wynter and Bland-Sutton exhibited a patient twenty-three years old, suffering from anemia and jaundice from birth. The hemoglobin was reduced nearly 50 per cent, with 78 nucleated reds per cubic millimeter and whites 13,000. Bilirubin was present in the serum and urobilinogen only in the urine. Fragility of corpuscles was represented by laking in saline solution 0.55 per cent as against 0.45 per cent control.

Splenectomy was performed in December, 1912, with immediate relief of symptoms, the jaundice disappearing within twelve hours. A month afterward the reds had increased to 3,365,000 and the white cells diminished to 7000. Corpuscles laked at 0.45-per-cent saline solution against 0.37 control. There was no urobilinogen or excess of urobilin in the urine.

The blood count the previous day showed the red cells to be over five million, and the hemoglobin 110 per cent. Several of the splenectomy patients shown exhibited the complexion of chronic mitral disease in consequence of the relative plethora. As a result of removal of the spleen in acholuric jaundice, it was usual to have an excess of blood for some months. In this particular instance a partial invalid was converted into a practically normal person, maintaining himself and entering fully into the enjoyment of life.

Thursfield reports the case of a boy first seen in 1902, when he was nine years old. He had always been yellowish. He was admitted to the hospital for anemia and shortness of breath, his heart being dilated and giving a harsh systolic murmur. The liver was palpable one inch below the costal margin and a hard, smooth spleen reached to within one inch below the iliac crest. The hemoglobin was almost 30 per cent, with a marked diminution of the reds. The feces contained plenty of bile pigment, while the urine, though of a dark color, contained none. On several occasions a well-marked urobilin band was seen by the spectroscope. The cerebrospinal fluid did not contain bile, nor did the serum of the blood on the only occasion on which it was examined. A Wassermann test was negative.

The patient improved slightly for a short time, and then symptoms became more marked. The spleen was therefore removed. Following the operation there was the usual leucocytosis; at the end of ten days this had disappeared, and three weeks later the boy had entered on a steady improvement. The fragility of his erythrocyte count began to move upward, though it still remained somewhat greater than the normal. At the present time, sixteen months after the operation, he is in excellent health with no signs of the disease. The reds are five million and the hemoglobin over 100 per cent. Thursfield said he believed there were means of distinguishing cases of acholuric jaundice from all other forms of enlargement of the

spleen, viz., the fragility of corpuscles. Wherever examination could be made the fragility of the erythrocytes has been found definitely increased, at any rate in the congenital cases. In the enlarged spleen of the "splenic anemia" type, the fragility is either normal or more frequently abnormal in the wrong direction—*i.e.*, the corpuscles show increased resistance. It is therefore most important that the fragility of the red corpuscles should be stated in every case reported as one of "splenic anemia."

Dawson notes that among the cases of hemolytic jaundice which have been published one can see close resemblance between some and those of pernicious anemia. The anemia, the size of the spleen, and even the fragility of the blood are variable features. The jaundice in these cases is due to overproduction. There is a surfeit of bile in the liver, due to the precursors of bile pigment being formed in excess by the spleen; this excess he believes must be due to an interaction between two factors, namely, the spleen and the fragile blood. The part played by each of these factors would vary in different cases. The spleen might be so active as even to be able to break down blood in excess which is not normally fragile. On the other hand, it is conceivable that blood might be so fragile that even the removal of the spleen would not prevent an excess of bile formation. He regards the manufacture of the bile pigment as a special function of the spleen which is distinct from the action which breaks down blood and which if present in excess produces an anemia. He has under observation a case in which Sir Spencer Wells removed the spleen in 1887. As to whether hemolytic jaundice should be left alone Dawson believes that it should not be. Not only do these people have a poor quality of life, but they are liable to gallstones. Moreover, cases are met with which almost glide into the group of splenomegalic cirrhoses, and he believes some of the hemolytic jaundice cases would have a tendency to get that cirrhotic liver which one is accustomed to associate with so-called Banti's disease.

Weber notes in regard to classification that Chauffard first succeeded in clinically separating out a group of jaundice cases characterized by excessive fragility of the erythrocytes toward hypotonic saline solutions; the presence of jaundice with bilirubin in the blood serum but none in the urine, but with excess of urobilin in the urine; the frequent presence in the blood of a few normoblasts, with great anisocytosis and polychromatophilia of the red cells. It then became possible for others to pick out cases without jaundice, but which nevertheless showed the characters of chronic "hemolytic jaundice," or "chronic acholuric jaundice with anemia and splenomegaly." Anemia of that kind should be called "splenomegalic anemia," so as to distinguish it from splenic anemia. Excessive fragility of the erythrocytes is an essential feature of chronic "hemolytic jaundice," but there are atypical cases which do not show this. In ordinary cases of obstructive jaundice in which bile salts and probably bilirubin are circulating in the blood. there is often increased resistance instead of increased fragility toward the hemolytic action of hypotonic saline solutions. This has been attributed by Whyte to the presence of sodium taurocholate.

This whole report and discussion are of vivid interest as showing the direction of thought upon the part of the practitioner toward the spleen as the underlying cause for anemias and asthenias which have baffled all forms of medical treatment; and toward recourse to surgical procedures, certainly in those cases characterized by splenic enlargement, possibly in other cases in which such enlargement cannot be demonstrated.

REPORTS ON THERAPEUTIC PROGRESS.

THE INTRAMENINGEAL TREATMENT OF TABES AND CEREBROSPINAL SYPHILIS.

BOGGS and SNOWDEN in the *Archives of Internal Medicine* of June 15, 1914, discuss this important matter and conclude from the cases cited that it is evident that the intraspinal method is a step forward in the treatment of tabes and cerebrospinal syphilis. The patients were uniformly relieved from pain, and as far as locomotion is concerned there was a slow but definite improvement, in some instances amounting almost to restitution to normal. It is in this respect that their cases seemed to do better than those of Swift and Ellis, perhaps on account of the larger doses of serum.

The psychic effect of the treatment is also marked. The patients became encouraged by the quick relief of pain and the first improvements in the control of motion, and were faithful in their efforts to use the legs and practice walking, stair climbing, etc. The nutrition also rapidly improved under these stimuli. In fact, this very improvement was a hindrance in their series, for with the class of people under their care it was in most instances impossible to keep them in the hospital long enough to carry the treatment as far as they would have liked to do.

The effect of the treatment on the cerebrospinal fluid was very striking. The cell-count first fell to normal, the Wassermann reaction becoming negative some time after the cells were reduced. It has seemed from their observations that the Noguchi reaction was of little value during the carrying out of this treatment, since such large amounts of globulin were injected into the spinal canal. At any rate, the Noguchi reactions were positive, in most instances, after the cell-count and Wassermann indicated a normal fluid.

Where the patients are intelligent enough to appreciate the necessity for repetition of the treatment until the biologic indices of normal are maintained, there need be but transient interruptions of regular occupation, lasting forty-eight to seventy-two hours as a rule. It is also true that while the risks are minimal they do exist, and in all probability very feeble, advanced tabetics or very acute cases of cerebrospinal lues should not be treated in this way.

In those of their cases which were treated with an undiluted serum the reactions were sometimes more severe than those reported by Swift and Ellis—pain in the abdomen, legs, and rectum, with occasional nausea and vomiting or dizziness, and in a few instances a little fever. They do not feel, however, that these constitute any contraindication to the larger doses of whole serum, especially in the light of the apparently greater benefit to the patient. The reactions produced by the injection of the salvarsanized serum from another patient were very severe, as shown by two of their cases, the donors of the serum receiving an equal quantity of the same lot, at the same time and in the same way, having no reaction at all.

It is quite evident that so indirect a method of applying arsenic in the treatment of syphilis of the central nervous system cannot be considered as final; but they believe it is an advance on what has gone before and a spur to the findings of new preparations or new methods more suitable for the accomplishment of the desired results.

THE TREATMENT OF PNEUMONIA.

In the *Australian Medical Journal* of May 9, 1914, SEWELL in writing on this topic says that having eliminated the possibility of chronic kidney disease, what can we do to help the individual suffering from hypertoxemia? It is in such cases that the giving of pneumococcic serum early and in large doses is so urgently indicated, together with sensitized vaccine, since the serum certainly has some antitoxic value. Again, in these cases there is always some degree of pneumococcal septicemia, and it is of the greatest importance that bacteri-

olytic substances should be brought into action without delay. Sewell is convinced also that subcutaneous balanced salines are of very great value since they help to maintain blood-pressure and promote diuresis, thus indirectly helping in the elimination of toxins. Subcutaneous salines may be given almost painlessly by a careful nurse, using either a douche-can or a funnel. Sewell does not approve of the use of any form of force syringe for this purpose.

One of the worst cases of pneumonia he has seen was in consultation with another doctor last year. A patient of sixty-five with an extensive double pneumonia was in a condition of high delirium with low blood-pressure and poor leucocytic response. Here, in addition to serum treatment, one pint of saline was administered subcutaneously for eight days at six-hour intervals, the patient making ultimately a good recovery.

Another common manifestation of hypertoxemia is a falling blood-pressure, thus illustrating the great importance of blood-pressure observations in this disease. This fall of blood-pressure has been definitely shown to be due to a failure of the vasomotor mechanism and not to any extent to myocardial weakness. In a case showing a good reaction the slight asphyxial conditions present bring about a slight rise of blood-pressure, but in cases of hypertoxemia the fall of blood-pressure is probably due to direct poisoning of the vasomotor center and possibly indirectly to a condition of cloudy swelling occurring in the adrenals and pituitary body, thus diminishing the output of normal pressor substances into the general circulation. Accordingly it is advisable, in addition to subcutaneous salines, to temporarily supply pressor substances which are deficient.

Immediately we are faced with a difficulty in choosing our pressor substance. Adrenalin extract is too transitory in its effect to be of very much value. Again, if used in minute doses in the subcutaneous saline, say 1 in 100,000, it simultaneously contracts the small vessels in the kidney with those of the body generally and so diminishes the urinary output. On the other hand, pituitary extract, while constricting the systemic arterioles and so raising blood-pressure, does not constrict the renal arterioles, and thus acts as a diuretic. However, it has been found experimentally that repeated doses of pituitary extract may bring about a reverse action and an actual fall of blood-pressure may result after its exhibition. Sewell has never seen a bad result with it even where it has been used four-hourly for five days in succession, but always takes the precaution of seeing that blood-pressure observations are made shortly after it has been injected. On the other hand it is of great value in many cases. In one case recently seen in consultation with Dr. Mackay, where the blood-pressure was under 80 on the third day of an attack, the pressure was permanently maintained during the remainder of the illness at between 95 and 100 by the use of pituitary extract at six-hour intervals.

Sewell quotes another case to further illustrate the importance of regular blood-pressure observations in pneumonia. A patient was admitted under his care in the Melbourne Hospital soon after the onset of this disease. The clinical clerk informed him that there were 7000 leucocytes present and that the blood-pressure was 120. On inquiry about the urinary condition, he was told that the specific gravity was 1020 and that there was a trace of albumin present. It seemed from this report and from a general examination of the patient that, apart from the rather low leucocyte count, the patient's response had been a fair one; however, the house physician informed him that when the patient was admitted two days before his blood-pressure was 170 and that the urine had then a specific gravity of 1012, and, on microscopical examination, showed hyaline and granular casts to be present. This report altered the prognosis entirely, showing as it did a rapidly failing blood-pressure in a patient whose elimination of toxins was interfered with owing to chronic kidney disease, thus accounting for the simultaneous failure of leucocytic

response. If he had only had the observations on the blood-pressure and urinary examination made by the clinical clerk subsequently to those of his house physician he would have been far astray in prognosis in this case. The patient died twenty-four hours later.

Quite a number of similar cases have come under his observation during the past twelve months, and accordingly he has felt that it would be of some value to bring before us this aspect of the question, rather attempting to deal with some of the difficulties than to present any complete routine method of treatment.

THE EARLY TREATMENT OF INFANTILE PARALYSIS.

This subject is summed up in the *British Medical Journal* of May 30, 1914, in a somewhat disheartening way.

For all our increasing knowledge about acute anterior poliomyelitis or infantile paralysis, its etiology, pathology, and epidemiology, it must be confessed that our treatment of the disease during the acute stages makes but little advance. Flexner and his pupils in America and a number of workers in Germany have identified and cultivated virus of the disorder, while elaborate studies made in many lands have brought to light a quantity of interesting and important facts with regard to the ways in which the infection is caught and spread. Its prophylaxis can be compassed nowadays better than was formerly the case. The patients can be isolated; their infectious nasal, buccal, and pharyngeal secretions can be appropriately dealt with; and the many healthy carriers of the disease can be rendered less harmful to others by the local use of antiseptics, such as urotropin or hexamethylene tetramine. But once the infection has been caught these antiseptics are comparatively powerless, and when it has reached the central nervous system the virus is almost inaccessible to drugs. It is true that a minute fraction of the doses of urotropin which a patient receives may reach his cerebrospinal fluid, and so may tend to inhibit the growth of the virus of infantile paralysis in the nervous system. So far as it goes this is, no doubt, an excellent thing; unfortunately, however, there is no good reason for believing that urotropin, the best antiseptic for the purpose at present known, possesses any great practical value in treating the complaint in its acute stages and cutting short its progress. This powerlessness in the face of an acute infectious disorder so dangerous and crippling as infantile paralysis is one of the reproaches of modern medicine.

A gloomy picture! But its gloom is somewhat lightened by a number of considerations very clearly set out by Mr. Robert Jones in the Annual Oration to the Medical Society of London. The matter is one of great practical importance, particularly at the present day when outbreaks of the disease seem to have grown more frequent, and at this season of the year when the warmer weather is coming, and with the increased likelihood that small epidemics of infantile paralysis will occur. Mr. Robert Jones does good service by laying down the lines on which medical treatment should be given to cases of poliomyelitis in their earliest stages, and by emphasizing the fundamental importance of beginning that treatment at the earliest moment possible. Treatment at this stage habitually falls into the hands of the medical man in attendance and not into those of the surgeon; and Mr. Jones would make it a general rule that in every case the head and spinal column should be kept at rest from the very beginning of the attack. If the child has much pain in the spine and limbs, as not rarely happens, fixation of the spine and limbs gives more relief than any other procedure. In any case, to keep the spinal cord and head at rest, so far as possible, in acute poliomyelitis is only to act in accordance with the general principles regulating the treatment of inflamed organs or areas in other parts of the body. It is important that this rest, continued through the acute and early convalescent stages, should be continued

so as to prevent the adoption of faulty positions by the affected limbs, in order that the deformities that are likely to follow the paralysis may be minimized. Until the tender stage of the disease has passed away—a matter of from three to eight weeks or even more—no active treatment should be undertaken; it is argued that active myelitis may be present throughout the tender stage, so that treatment by massage or electricity would be premature.

Having drawn attention to the importance of complete rest during the early stages of infantile paralysis, Mr. Robert Jones proceeds to point out the necessity for great care when active treatment is at last begun. It is not the nervous part only of the neuromuscular apparatus that is damaged in infantile paralysis. Everybody knows that the motor nerve cells in the anterior horns of the spinal cord are injured in this disease; but it is not so generally realized that the affected muscles may suffer doubly—first in their nerve supply, and secondly by being themselves overstretched while thus disabled. Hence it is of great importance that from the first they should not be stretched, and to avoid this attention must be given to the position of the limb; and, again, that when massage and active movements are prescribed care should be taken to avoid the possibility of straining or overstretching the injured muscles. The massage must be very gentle at first, the movements must be carefully limited, and the limb must be put up in apparatus so as to keep the paretic muscles in a position of relaxation until they have improved in tone. The success of treatment depends upon the maintenance of this muscular relaxation continuously until there is evidence that the damaged muscles have begun to recover. When this occurs the position of relaxation may be gradually discontinued.

Mr. Jones gives a very clear and careful account of the various methods of treatment he has found effective in infantile paralysis, and he emphasizes and explains his points with a number of illustrative cases and illuminating comments upon them. We shall not attempt to follow him into the discussion of the operative measures that may be taken to remedy paralyses and deformities which remain after rest, in its special application to particular groups of muscles, and judicious massage have accomplished all that is possible by these means. They call for the exercise of the highest surgical judgment and skill, and incidentally raise problems which neurologists have not yet fully solved.

OBSTETRIC PRACTICE COVERING 2108 CASES WITHOUT MATERNAL MORTALITY.

In *Northwest Medicine* for June, 1914, RICH makes a report under this title and with the following subheadings:

Preliminary Care and Treatment.—The obstetrician's duty to his patient begins when he is engaged to attend the case and ends when his patient is safely delivered and restored to health. The writer is of the opinion that we are all too careless about our preliminary care of these cases. Pelvimetry, in primiparæ especially, is of great importance but almost wholly neglected. Many cases never have the urine examined, and many lives are sacrified as a result. Many cases with bad hearts and kidneys are neglected, with disastrous results. Nipples are neglected, with untold trouble to mother and child. We pay altogether too little attention to the room, bed, and surroundings of the patient. If patients are instructed how to sterilize napkins, etc., these things will be ready without expense to the family and will be a great help to the physician.

Cleanliness.—The same principles of cleanliness should be observed in obstetric work as are followed in all surgical work. A woman acquires an immunity to germs that she is in daily contact with, and the normal acid secretions of the vagina of a pregnant woman effectually destroy all pathological organisms in the birth canal within a short time, so that she is comparatively safe, so far as she is concerned, from infection in and of herself. We have all

been surprised at the infrequency of infection in cases of complete laceration of the perineum. Nature has blessed these tissues with great resistance against infection.

Rich is of the opinion that the man who shaves the external genitals and scrubs and paints them with alcohol and iodine will have no better results than the man who does not, providing other things are equal, and he will certainly be less in demand. His opinion is that more harm comes from scrubbing filth from the skin into the vagina and from dirty bath water entering the vagina than possibly comes from avoiding the tub bath and external scrubbing at the time of delivery. A sponge bath is proper, but never a tub bath when labor is at hand, and the external genitals are best let alone, if reasonably clean, until the head distends the perineum, when hot applications of bichloride or lysol solutions will do all that is necessary.

Rich's rule is to make but one vaginal examination, unless labor be greatly prolonged. This is done with a clean hand, encased in a boiled rubber glove, with the patient lying on her left side. The right labium is gently drawn upward with the left forefinger, so that the examining finger may enter the vagina without coming in contact with the external genitals to any great extent. One finger is sufficient and much less painful than two.

Rubber gloves are a great blessing to child-bearing women. Many years ago a famous obstetrician was asked to what he attributed his success. He answered by pointing to his short, clean finger-nails. Some physicians can open abscesses and treat septic cases and yet keep their hands and themselves clean, while others, less careful, are unfit for clean work when treating such cases.

After a woman is properly delivered, the whole after-treatment is a matter of perfect cleanliness. The instructions Rich gives to nurses in obstetric cases are "to keep the baby warm and the mother clean."

He uses constantly a small wet bichloride napkin over the vulva, over this a large sterile pad the first five days, and after that plain dry sterile napkins. He leaves bichloride tablets, always marking them "poison," and instructs the nurse that one will kill the whole family if eaten, and orders the patient to be bathed with 1-to-3000 bichloride solution around the birth canal three times a day, or after the bowels move, while she is in bed, and twice daily after she is up. The bowels are moved on the third day and every day thereafter. No restriction is made as to diet except, if the breasts are full and painful, the liquid is cut down.

The woman gets on her knees to urinate, so that any blood in the vagina will drop out. She is allowed to sit up in bed early and is encouraged to lie on one or the other side while in bed, rather than on her back, to prevent retrodisplacement of the uterus.

No douche is given under any circumstances, and if there be a syringe in the house, it is ordered locked up and the key lost. Rich has given only four patients, that he has delivered himself, a douche in ten years and has not had a case of sepsis in that time. While an intelligent nurse may not do great harm with a syringe, an ignorant one may kill the patient. The sooner we can impress upon the public that "washing out," as they call it, is a most dangerous thing, the better it will be for womankind. Kelly pads, bedpans, syringes, etc., are all sources of danger. He uses paper instead of Kelly pads, with great satisfaction and no expense. Many of his cases have been nursed by practical women, as all patients cannot afford a trained nurse.

Women and their husbands should be instructed that it takes six weeks for generative organs to return to a normal condition after childbirth, and that she should stay in bed until all red flow has stopped. One woman may be better able to get up in four days than another in two weeks. No woman should return to her husband's bed for at least six weeks, and many for a much longer time. We are all careless in giving these instructions to our patients, and many women suffer greatly in consequence. Rich has seen a case of infection following

sexual intercourse ten days after childbirth, and he has no doubt this would explain some cases of late infection of seemingly obscure origin.

All lacerations should be repaired at once. He has had but one complete laceration of the perineum in his practice, and that was in a very slow primipara, in whom forceps were not used.

Every child's eyes should be washed out with boric acid solution, and he uses in every case a one-per-cent nitrate of silver solution following it. He has had two babies develop gonorrheal eyes—one eye in each case. A safe thing is to be suspicious and treat the eyes in every case.

Patience.—Next to cleanliness comes patience as an important factor in obstetric work. A cross, impatient obstetrician is one of the mistakes, and time generally soon eliminates him. Until the cervix is fully dilated and for some time afterward, one must wait and encourage the patient.

A dose of morphine is frequently the proper thing in the early stage of labor, when suffering is great and the os uteri is thick and resisting. Rich is satisfied much damage is done in country work, especially when the doctor is far from home and anxious to get back, by hurrying cases and by the too early application of forceps. In such cases, if the patient were given time and possibly a dose of morphine and the doctor put to bed, much less damage would be done. It is better practice to charge for additional visits than to injure the mother and child by haste.

If, however, dilatation has been completed for two hours and pains have been severe and progress is little or nothing, and the woman's heart is getting faster and the baby shows signs of weakness, it is generally good practice to apply forceps and bring the head down, so that the perineum is considerably distended, and then remove them.

If in the course of labor it becomes advisable to apply forceps, Rich does not consider it necessary to call the family together and hold a consultation or to worry the patient about the matter. His practice is to quietly boil his forceps, give the patient a little more chloroform, turn her across the bed, and deliver her as carefully and gently as possible. She need not know that forceps were applied for ten days afterward. Properly applied forceps should not slip off and land the doctor across the room.

The obstetrician who applies forceps because of a greater fee is dishonest and a bad man from any standpoint. When to apply forceps is something learned by experience, but it is safe to say that the young man will apply them much more frequently than his older brother.

Rich has had no case in which Cæsarian section seemed necessary, and he has had professional help in delivering but three women of the 2108 cases reported. One of these was a forceps case, the other two placenta previa.

Too much chloroform, in his opinion, is responsible for the death of many children and more injurious to the mother than most of us realize. He gives chloroform in nearly every case, but only when the head is on the perineum, unless suffering is very intense. When the head is on the perineum the patient's suffering can be relieved, and she can be controlled and protected much better if she be given chloroform, and if piles have been troublesome and have become swollen and distended, if the sphincter ani be dilated as soon as the child is born and before the mother has recovered from the anesthetic, much suffering will be avoided. He has done this many times with most happy results.

After-pains.—If the uterus properly contracts and there are no blood-clots within it, after-pains seldom are bad. Giving morphine for after-pains is, in his opinion, entirely unjustifiable. Asafetida or chloral is better. Rich knows of three cases in which morphine tablets were left for after-pains and bichloride tablets for bathing. In each case a mistake was made and the bichloride tablets taken internally, with the result that one woman died and the other two were saved only by the prompt action of the doctor.

Pituitary extract, in the writer's opinion,

is a most valuable remedy to stimulate uterine contractions when a stimulant is indicated, but when used simply to hurry things for the convenience of the doctor when progress is being made is not justifiable. He is satisfied much harm will result from its misuse. All will admit that a slow, easy labor is safer and better for mother and child than a short, violent one. Rich is of the opinion that the fewer drugs we use in a physiological process like labor the better.

Many cases of heart and kidney disease should be delivered early, at seven or eight months or earlier. The mother's life is of first importance, and why let her take chances of dying after her child has reached viability? We too often temporize, wait, and lose both mother and child.

Serious hemorrhage is seldom encountered unless the labor has been unduly protracted, the uterine muscles exhausted, the cervix badly torn, or the placenta has been only partially detached. In the latter case, if the placenta cannot be easily delivered by expression, it should be quickly removed by the gloved hand before the patient has lost too much blood. If pieces of membrane tear off from the placenta they are best left alone. They will be less liable to do harm than intrauterine manipulation to remove them. If the cervix has been torn badly, fatal hemorrhage may result if it is not sutured at once.

No physician should leave a patient for at least three-quarters of an hour, and better one hour, after her delivery, and he should stay much longer if there has been much loss of blood or other trouble.

Cases of placenta previa should be delivered early. Waiting until infection has occurred or until the woman has become exsanguinated results in disaster. Cæsarian section, either vaginal or abdominal, is sometimes the safest procedure in these cases in which the cervix is rigid.

A diagnosis of puerperal sepsis should be made only after everything else has been excluded. Too many of us jump at such a diagnosis when called to a woman who has recently been delivered and who has some fever. This is especially true if she has been delivered by the other fellow. The result is many unnecessary curettements and many unnecessary deaths. Rich has seen a case having almost complete suppression of urine given chloroform and curetted, and death resulted within twenty-four hours. The physician who did this made no inquiry at all about her kidneys. Every obstetric case is a problem in itself, and experience is a great teacher in determining what to do, whether to wait on nature or to interfere.

THE VALUE OF HEXAMETHYLENAMINE AS AN INTERNAL ANTISEPTIC IN OTHER FLUIDS OF THE BODY THAN URINE.

HINMAN, in the *Archives of Internal Medicine* of June 15, 1914, concludes that hexamethylenamine is dependent on the liberation of formaldehyde for its antiseptic value and that hexamethylenamine is not converted into formaldehyde in any of the normal alkaline fluids of the body; therefore it can be of no prophylactic value in any of these fluids.

After some infections of these fluids there may be under certain conditions a change in reaction sufficient to produce slight liberation of formaldehyde, but it is not possible to show that there would be enough to give antisepsis.

In localized infections of pronounced acidity, hexamethylenamine is not taken into them from the circulation in amounts to furnish formaldehyde in antiseptic strength (the gall-bladder, possibly, excepted).

The therapeutic use of hexamethylenamine as an internal antiseptic is justified, experimentally, for urinary conditions alone, and then only when it is excreted into an acid urine.

In the same issue of the same journal MCGUIGAN and HESS state that since, after the administration of hexamethylenamine, free formaldehyde appears only in the gastric juice and acid urine, and not in

other secretions or in the blood, even with dialyzing tests, the liberation results from the acid reaction only and not from cell action. Even if it were liberated in other locations it would probably exert no beneficial action because of its reconversion or rapid oxidation into injurious products. Combined formaldehyde, as hexamethylenamine, does not decompose readily until an acid medium is reached, when the action is that of weak formaldehyde. The only apparent indication for the internal administration of the drug, therefore, is in infections of the urinary tract.

HEAT-STROKE.

The *Journal of the Royal Army Medical Corps* for June, 1914, has this to say as to treatment:

There is general agreement that the most successful treatment of heat-stroke is the application of cold by means of baths, douches, or sponging with cold or iced water, by the wet pack, and iced enemata. The credit of the introduction of these methods appears to be due almost entirely to the medical service of the army.

In all but four of the fifty cases now under review this treatment was employed. Of the exceptions two were found dead; another was a cardiac case with definite post-mortem evidence of endocarditis; and another died a few minutes after admission to the hospital. In many cases a dose of calomel was given on admission. It is interesting to note in confirmation of previous results that diaphoretics failed.

The local enemata, originally suggested by Parkes, appear to be especially useful in those severe cases in which the circulation of the blood through the skin is so defective that the blood cooled at the surface is not exchanged rapidly enough for the heated blood of the internal organs. The application of ice to the head and neck seems to give prompt results, owing probably to the fact that the high temperature especially affects the brain.

The success of the treatment by cold is strong evidence in favor of the view that heat-stroke is due to a disordered regulation of temperature produced by heat; the failure of antipyretic drugs can be considered as evidence against the bacterial theory of Sambon.

SENSITIZED VACCINES.

This subject, theoretically attractive, but questionable practically, is discussed at length by the *British Medical Journal* of June 6, 1914.

So long ago as 1902 a note on this subject was presented by Besredka to the Académie des Sciences dealing with the results of his preliminary investigations with sensitized vaccines in relation to plague, cholera, and typhoid infections. The results of these early experiments were very favorable, and the new technique was credited with many advantages over existing methods. The procedure at present most usually adopted in the preparation of these vaccines is similar to the method originally employed, and is briefly as follows: Pure cultures of the indicated organism are allowed to remain in contact with homologous immune serum for a sufficient time to permit of the absorption by the bacterial cells of the specific antibodies present in the serum. When this has taken place the bacteria are centrifuged down and the supernatant fluid is removed and replaced by normal salt solution. The deposited bacteria are then shaken up, and the process is repeated until the last trace of serum is removed from the bacterial bodies. Besredka and his pupils recommend the use of living sensitized vaccines, but other workers prefer to kill the bacteria after sensitization by the addition of one per cent phenol to the terminal washing.

The claims advanced in support of the superiority of this method of preparing vaccines over other procedures are numerous, and Besredka has gathered together many facts in favor of his contentions. In the first place it is well known that ordinary vaccines are very often toxic, and that their administration is not frequently attended with very unpleasant local and constitu-

tional symptoms. Workers with sensitized vaccines, however, claim that these toxic effects are practically abolished by the new technique, and that either killed or living organisms may be used with perfect safety. Though it does not appear probable that any actual neutralization of endotoxin takes place during the process of sensitization, yet the bulk, at any rate, of the experimental work on this subject would indicate that the action of the bacterial toxin is in some way modified with regard to the infected animal.

In discussing statements as to the toxicity of ordinary "whole vaccines" it must be remembered that the question of vaccine therapy is still in its infancy, and the older methods are doubtless capable of great improvement and extension. Recently, for example, it has been found that while the "derived vaccine" or endotoxin obtained from the bodies of plague bacilli when subjected to autolysis loses its toxicity, yet its immunizing properties are not affected. The employment of such a vaccine, moreover, greatly facilitates standardization and accuracy of dosage. It may well be that the use of such atoxic derived vaccines will in the near future open up new and fruitful fields of inquiry, and may throw unexpected light on many of the dark and complex problems of immunity.

The claim is also advanced that by the use of sensitized vaccines the immunity reaction is accelerated, and is acquired without any diminution of specific resistance, while with ordinary vaccines, although the occurrence of a negative phase can to some extent be guarded against by accurate and skilful dosage, the danger is nevertheless always present.

In addition to these advantages, it is stated that the immunity acquired is of a more permanent character than that obtained with ordinary vaccines.

With regard to the mechanism of the immunity conferred by sensitized vaccines, the generally accepted view is that during sensitization the bodies of the bacteria become covered over with specific agglutinin and opsonin, that the bacteria thus sensitized are readily taken up by the polymorphonuclear leucocytes, that bacteriolysis occurs in the interior of the phagocytes and endotoxin is liberated, and that antibody production is stimulated by the endotoxin thus set free in the interior of the leucocytes. The essential factor in the process appears to be the shortening of the preliminary work of the phagocytes.

The original experiments of Besredka have been extended by many workers since the year 1910, when the study of sensitized vaccines again commenced to attract attention, and a very wide area of research has been covered by Besredka and his pupils. A few examples will suffice. Calmette and Guerin have obtained good results by using living sensitized tubercle bacilli in the vaccination of cattle against tuberculosis, and testify to the superiority of this method as compared with the original procedure of von Behring in which living unsensitized bacilli were employed. Meyer has reported encouraging results in cases of human tuberculosis, especially in local tuberculous affections, such as fistulæ and abscesses, and tuberculous conditions of bones and articulations. Levy and Aoki, working with experimental pneumococcal infection in rabbits, found that the use of sensitized vaccines produced a more rapid and satisfactory immunity than that obtained by the employment of an ordinary killed vaccine, and they have even adduced evidence to show that such vaccines have a curative as well as a protective action. Bridré and Boquet, experimenting on Algerian sheep with a sensitized virus, obtained an immunity, *rapide, solide et durable,* against infection with sheep-rot. The procedure has also been extended to such widely different diseases as rabies, dysentery, and diphtheria with varying success.

A great deal of work with sensitized vaccines has been accomplished in relation to streptococcal infections, and in this connection the work of Broughton-Alcock and M. H. Gordon is of particular interest. Their publications bear testimony to the good results they have obtained by the use of sensitized vaccines. With regard to the

question of using living vaccines, Besredka is of opinion that in some infections (typhoid fever, for example) the living vaccine is infinitely superior to the killed vaccine. Many other workers habitually use living sensitized vaccines, but taking into consideration the fact that our knowledge of the factors which influence the variation of bacterial virulence is still very rudimentary, the indiscriminate use of living vaccines in treatment would seem most undesirable.

The question of the best antiserum for sensitization of the bacilli, again, appears to be largely a matter of individual opinion. Some workers use polyvalent antiserum, others autogenous serum, and so on. The sensitized vaccines employed are derived either from stock vaccines or are prepared from the causal organism isolated from the patient; and here again there does not seem to be any uniformity of opinion as to the best procedure to be adopted. The question of dosage is a matter which has to be left very much to the discretion of the physician; the intensive method of Fornet and Müller, in which increasing doses of vaccine are given for three days in succession, is strongly recommended by those who have experience with it. A case of uterine abscess, due to the bacillus proteus, and treated by the double method of Broughton-Alcock, is recorded by him. In this method killed vaccines derived from the causal organism are first given at intervals of three or four days, and are followed up by an autogenous living vaccine sensitized with the patient's own blood serum. This method, which was described by the author at the International Congress in London last year, has given most successful results in Dr. Broughton-Alcock's hands.

The time is not yet ripe for a definite pronouncement on the value of Bedreska's method of vaccination. A great deal more experimental work on these lines will be necessary before the claims advanced can be deemed to be fully substantiated and the best methods of application established. Pending more detailed information on this interesting and important subject, it may be doubted whether public health departments and hospital boards would at this stage of our knowledge be justified in expending the funds necessary for keeping up the manufacture and distribution of sensitized vaccines. If the methods advocated stand the test of more extended application and prove to be of incontestable value in treatment and in prophylaxis, the suggestion embodied in the latter portion of Dr. Champtaloup's interesting communication will no doubt receive the serious consideration of public bodies interested in these matters.

THE IMMEDIATE EFFECT OF REPEATED DOSES OF THEOBROMINE, SODIUM SALICYLATE AND THEOCIN ON RENAL FUNCTION IN ACUTE EXPERIMENTAL NEPHRITIS.

FITZ reports in the *Archives of Internal Medicine* of June 15, 1914, as the result of his studies the following conclusions:

1. The immediate effect of repeated small doses of theobromine, sodium salicylate and theocin on renal function in acute experimental uranium nephritis of different degrees of severity is beneficial since they cause an increased output of urine, chloride, and nitrogen, and do not diminish the excretion of phenolsulphonephthalein.

2. The immediate effect of repeated small doses of theobromine, sodium salicylate and theocin on renal function in acute experimental bichromate nephritis of different degrees of intensity is harmful, since although an increased output of urine and chloride occurs, the excretion of nitrogen is unaffected and that of phenolsulphonephthalein is diminished.

3. The repeated injection of small doses of theobromine, sodium salicylate and theocin in sufficient amount produces a condition of renal fatigue in which the kidney is no longer able to react. This is most easily obtained in bichromate nephritis.

4. Various types of acute experimental nephritis respond differently to repeated injections of theobromine, sodium salicylate and theocin both in regard to immediate changes in the excretion of chloride, nitro-

gen, and phenolsulphonephthalein, and in regard to the degree of renal fatigue which is induced.

5. These experiments do not include observations on nephritis of the most extreme grade of severity. In the few studies made on animals which had the different kinds of lesions and were anuric, the diuretics were not active in provoking an increased output of either water, chloride, nitrogen, or phenolsulphonephthalein.

ADRENALIN IN THE TREATMENT OF ACCIDENTS DUE TO SALVARSAN INJECTIONS.

We have already called attention to this subject in a leading article in a recent issue of the GAZETTE, but it is so important as to be worthy of repetition.

In a recent issue of the *British Medical Journal* (May 9, p. 1044) was printed a letter from Professor Ehrlich, in which he set forth his views about the way in which death may occur after salvarsan injections. In that letter he refers in terms of warm approbation to the use of adrenalin advocated by Milian, and expresses the hope that by a vigorous adrenalin treatment it will be possible to prevent these occasional dangerous manifestations in salvarsan therapy, or, at any rate, in a very large percentage of the cases to treat them satisfactorily when they do occur.

Milian holds that salvarsan is the least toxic of all known arsenical compounds, and, indeed, denies that it has any toxic character at all; even after fatal doses of it have been administered no toxic lesions can be found in the human body. No cellular lesions have yet been demonstrated in the nervous system or other organs of men or animals killed by overdoses of salvarsan. Milian maintains that it is quite otherwise with atoxyl, for example, which he considers a highly poisonous compound of arsenic; he lays great emphasis on the fact that no true case of deafness or blindness due to the action of salvarsan has yet been published, the lesion, when it does occur, being really due to the syphilis and not to the salvarsan. To illustrate this point he quotes the case of a patient who received four injections of salvarsan (0.45, 0.60, 0.75, and 0.90 gramme), and six weeks after the last of them developed blindness of the left eye with acute optic neuritis. Believing that this neuritis was due to the syphilis and not to the salvarsan treatment, he at once gave the patient three further injections of salvarsan (0.60, 0.75, and 0.90 gramme) with the result that the neuritis subsided and the sight returned within twenty days.

Milian argues that salvarsan is a nocuous but not a toxic drug, and that its harmfulness resides in its very powerful action as a vasodilator. Comparing its action to that of amyl nitrite, he ascribes the catastrophes that occasionally follow its use to what he calls a *crise nitritoïde,* the effects of an acute vasodilatation, whether in the central nervous system or elsewhere. He states that salvarsan may be or has been administered in three forms: (1) The original acid salt, the dihydrochloride of dioxydiamidoarsenobenzol, which is a very violent vasodilator, and must be injected both slowly and in a highly dilute state if accidents are to be avoided; (2) the alkaline sodium salt, a much less powerful vasodilator; and (3) the neutral product neosalvarsan. He estimates roughly that some unpleasant result, some sort of a *crise nitritoïde,* is produced in perhaps 80 per cent of the cases in which (1) is injected, in 10 per cent with (2) and in only 5 per cent with (3). Some patients are very sensitive to salvarsan injections, as he remarks, and he calls them "ectasophils;" he gives a long list of the unpleasant symptoms that may result from injections of salvarsan, all of them due, he holds, to vasodilatation, and therefore all of them to be combated with adrenalin. Among these are the following: flushing and congestion of the face, swelling of the lips and ears, lacrimation, headache, syncope, irregular fever, urticaria, anorexia, vomiting, diarrhea, colic, rigors, sweating; and, when the acute attack is over, fatigue, exhaustion, pains all over.

The treatment and the prophylaxis for all these troubles recommended by Milian are quite simple. If there is any reason to suppose that the patient is going to take the salvarsan badly, he should receive, fifteen minutes before the salvarsan is given, a preliminary subcutaneous injection of ½ mg. of adrenalin and an intramuscular injection of 1½ mg. If unpleasant symptoms arise after the salvarsan injection, they can be cut short in a few minutes by the subcutaneous injection of the same dose of adrenalin. It is important that adrenalin of a trustworthy brand should be employed, and that it should be given and repeated from time to time as long as may prove necessary. No harm results from such use of adrenalin; the patient may become pale after its injection (Milian calls this a "leuco-reaction"), but the pallor is not associated with any discomfort, although the patient may exhibit a transient characteristic coarse "adrenal tremor" of the hands. He administers the larger part of the dose by intramuscular injection in order to delay the absorption and elimination of the drug as long as possible.

These intramuscular injections often prove painful for a day or two, and so the salvarsan may be combined with ½ or 1 cg. of stovaine. Alternatively "ectasophil" patients may be given adrenalin by the mouth, in the form of two pills containing each ¼ mg. of dry adrenalin, three times a day for three or four days after the administration of salvarsan. Milian also states that if a patient complains of a taste of ether, salt, or garlic, while the salvarsan is being injected, this is an indication that he is likely to be an "ectasophil" and to require treatment with adrenalin.

PHARMACOLOGY OF DIGITALIS.

Gottlieb (*Archives des maladies du cœur, des vaisseux, et du sang,* January, 1914) recently communicated to the XVII Congress International des Sciences Médicales a paper on recent advances in treatment by digitalis and its derivatives. He insists on the inapplicability of results obtained by experiments on normal animals to morbid states. He instances camphor as an example. In health this drug has little or no effect upon the circulation or upon the heart. In vasomotor paralyses, on the contrary, the irritability of the vasomotor center is markedly augmented, and the heart, which has almost ceased to beat from any cause, starts off again after a dose of camphor. The present task of pharmacology in relation to digitalis is to experiment in diseased conditions with minimal doses, which scarcely affect the normal circulation. The slowing of the heart-beat, so much insisted upon by Cushny and his collaborators, occurs only in that form of arrhythmia connected with auricular fibrillation. It is not in this way that the classical effect of digitalis in conditions of venous stasis, where there is neither arrhythmia nor abnormal rapidity of the pulse, can be explained.

The author divides the digitalis group of substances into two classes—those which are easily absorbed by the heart muscles and as easily disengaged, and those which are more slowly absorbed and act over a longer period. In the former class is strophanthin; in the latter digitoxin; others are intermediate. It has been shown that there are differences in the effect of the gastric and intestinal contents under different circumstances. Strophanthin is easily altered in the stomach and intestines. Digitoxin is much more stable, but is absorbed with difficulty. Ogawa has shown that digipuratum is fairly well absorbed, except where there is portal stasis, when absorption may be almost *nil*. The drawbacks incidental to the administration of digitalis by the mouth are avoided by giving strophanthin or digipuratum intravenously. In therapeutic doses intravenously neither nausea nor vomiting occur. For this and other reasons it would seem that gastric disturbance apt to be caused by digitalis is due to a local irritating action on the mucous membrane and not to an excitation of the center of vomiting.

Digipuratum is recommended as the best form in which to give digitalis by the

mouth. It is soluble in slightly alkaline media, is thus easily absorbed in the intestine, but passes through the stomach; it is fairly stable. The pure glucosides isolated from digitalis do not seem to have all the therapeutic properties of the leaves. Digipuratum is a mixture of the totality of the active principles, but in view of the inconstancy and variability of these, and our want of definite knowledge regarding them, it is best that the dose for each case should be ascertained by careful trial. The physiological method of standardizing digitalis preparations is to be preferred, but presents practical difficulties. By injecting different quantities of a preparation, the quality of which is known, into the lymphatic sac of the frog (after the method of Houghton) its strength can be estimated, but the quality of different specimens of digitalis leaves or preparations varies so much that experiments on warm-blooded animals are also required, in order to obtain a complete estimation of the value of any particular specimen.—*British Medical Journal,* May 23, 1914.

ON THE RESPECTIVE ADVANTAGES AND DISADVANTAGES OF X-RAYS AND RADIUM IN THE TREATMENT OF CANCER.

HERNAMAN-JOHNSON in the *British Medical Journal* of May 9, 1914, gives this summary of his views:

In early cases, whether for preoperative or postoperative irradiation, the Roentgen bulb is to be preferred to the radium tube.

When surgical removal is impossible, a tube of radium should be buried in the center of the tumor, but *x*-rays should be used, in addition, to the surrounding area, and to any organs where a metastasis is likely to occur. This combined treatment may result in some actual necrosis in the immediate neighborhood of the radium, but so long as this is confined to the interior of the neoplasm no harm will result.

Finally, radium therapy is the method of choice in cancer of the vagina, uterus, and rectum; but even here *x*-rays form a useful adjunct, so far as adjacent parts are concerned. Also, in practice, one finds that one has to wait at least three or four weeks to obtain a supply of radium. Nothing less than 50 mg. is of much value, and the market price of this is £800 to £1000. Consequently, most people have to hire their supplies, and pending their arrival *x*-rays should be used vigorously in all cases. Even uterine, rectal, and esophageal cancer can usually thus be held in check during the unavoidable period of waiting.

There are to-day thousands of cancer patients who believe, and whose friends believe, that they are being left to die because sufficient radium is not available to treat them. This belief adds greatly to their mental distress, and Hernaman-Johnson has endeavored to show that it is for the most part erroneous.

The Roentgen rays skilfully applied are of service in relieving pain, preventing ulceration, and causing the shrinkage or disappearance of external growths. Active life can be prolonged almost always for months, and sometimes for years. In pelvic cancer the insertion of a radium tube appears to be of greater value; but there is as yet little evidence to show that the results of the new therapy are, on the whole, more lasting than those of the older method.

THE MANAGEMENT OF CARDIO-RENAL DISEASE.

Writing in the *Medical Record* of June 13, 1914, NAMMACK states that when compensation is failing or broken, the same measure of treatment will be indicated as that carried out by the author in the main in cardiac patients, but with the conjoint administration of such drugs as may help to restore the disturbed balance of the heart. Thus, absolute rest in bed is the most important element, with the patient in the erect or semierect position, and this rest should be continued for a long time. The diet should consist mainly of a mixture of cream, lime-water, and milk, with the addition of a little fresh fruit, an egg, or a little meat, to avoid flooding the circulatory apparatus with fluid. Cold to the precordial

region may be a valuable help. After these measures have been instituted, the indication for the use of heart tonics must be considered.

A heart tonic is a medicine which aids the heart in prolonging its diastole and in enforcing its systole to the maximum. Of these, digitalis holds the first rank, but, like all powerful weapons, its use and abuse must be thoroughly understood. Its tolerance by the patient, and his susceptibility to its action, must be carefully tested, at the outset, by small doses carefully watched. Nammack's own preference is for the infusion, freshly prepared from the best English leaves and given ice-cold, to the exclusion of the "pure principles" of digitalis which are now so numerous and which are notoriously uncertain in their action. In gastric irritability, however, Nammack often uses digitalis hypodermically. Digitalis is contraindicated when the heart muscle is degenerated, as in myocarditis, fatty heart, and in the extensive degeneration of the left ventricle, which accompanies decompensated aortic regurgitation. These cases will not respond to digitalis, and, in fact, degeneration of heart muscles may be assumed in cases in which the phyisological action of digitalis cannot be produced by the administration of a reliable preparation of that drug given for three days. A condition of the arterial walls, such as extensive atheroma and fragility, may also contraindicate digitalis, lest by raising the arterial pressure it may lead to rupture. In these cases strophanthus may take its place, or a combination of digitalis and the nitrites may be found useful. Strophanthus strengthens the action of the heart muscle and slows the pulse, and does not raise arterial pressure to the same degree as does digitalis. In Bellevue Hospital they often use strophanthin, either hypodermically or intravenously, in bad cases of decompensation. Other substitutes for digitalis, when this drug is inapplicable, are convallaria, adonis vernalis, caffeine, theobromine, and strychnine. But none of these should be used when the arterial tension is high, as each of them increases the arterial pressure.

In extreme cases of cardiac failure there is no time for the slow action of heart tonics, and emergency measures must be adopted. Camphor, ether, and ammonia are the best, supplemented by brandy, champagne, and coffee. Camphor is best administered hypodermically in 10-per-cent solution in ether, or in 25-per-cent solution in sterile oil. Ether by the mouth may be given in the form of "Hoffman's anodyne." The aromatic spirits of ammonia is a rapidly diffusible stimulant for emergency use. Adrenalin hypodermically is useful if the systolic pressure is low.

When failing compensation has reached an advanced degree, the effects of back pressure become manifest in various organs, as a result of venous stasis or passive congestion. These effects are shown in the brain, the lungs, the liver, the kidneys, and the gastrointestinal tract, and while the measures directed toward improving the general heart action are still indicated, certain modifications or additions may become necessary on account of the urgency or added symptoms. Back pressure effects in the kidneys, or passive hyperemia of these organs, call for careful regulation of the diet. It is important to differentiate merely stasis in the kidney from a real nephritis. The presence of a valvular lesion, and of back pressure in other organs, will usually decide. Milk diet is useful here, but the total quantity of milk in twenty-four hours should not exceed one quart, and as this furnishes but 900 calories, sugar of milk, a little meat, fats, cereals, fresh fruits and vegetables should be added to preserve nutrition.

In considering the subject of nephritis it has been found that the anatomical or pathological classifications of that condition are most confusing. From the clinical and therapeutic standpoints it is best to recognize three conditions, viz.: (1) acute nephritis; (2) chronic diffuse nephritis—either following an acute attack, or developing insidiously from the beginning; and (3) "vascular" nephritis or cardiorenal disease. In both forms 2 and 3 cardiovascular signs develop sooner or later, and it is difficult to

determine whether the changes about the heart and arteries are primary or secondary, or whether the same causative factor affects simultaneously the cardiovascular apparatus and the kidneys. The last idea includes the newer conception of what is generally understood as "Bright's disease." The determining feature is high arterial tension, with resulting cardiovascular changes and nutritional disorders, particularly in those parts that are supplied by end-arteries, viz., the kidneys, the retina, and the brain. The cases should therefore be treated as heart cases rather than kidney cases, and along the lines previously stated in this article for compensated valvular disease. What the exact toxemia is that induces this condition is as yet obscure, but a disordered gastro-intestinal tract and liver, or some obscure perversion of metabolism, may be the source of the poison. A deranged bowel function floods the liver channels with toxic albuminoids and alkaloids; the liver cells are unable to cope with this tide, and the intestinal toxins filter through into the circulation beyond, where the kidney cells cannot deal with them efficiently, owing to their incomplete elaboration by the hepatic cells. Escaping thence into the general circulation they cause autointoxication, and cardiovascular as well as renal changes follow.

PITUITRIN DISPLACING FORCEPS.

Under this title DAVIS, writing in the *West Virginia Medical Journal* for June, 1914, speaks of pituitrin as a remedy already proven of inestimable value (though not fully understood and perfected) to be used in cases of parturition where forceps were in most cases formerly employed. Forceps are artificial, not nature's method of bringing a human being into the world, and should never be used until all other means to deliver the child are exhausted, compatible of course with the life as well as the future health of mother and child.

Now, when we have a remedy that will obviate all shock to mother, and possible injury to the child's head, possible infection, and in case of laceration (occurring in nearly all instrumental cases), leaving non-elastic tissue in scar substance, with strong probability of repetition of laceration in all subsequent labors, saving the poor woman many hours and sometimes days of suffering, why not use this remedy—pituitrin?

He considers it a perfect godsend, as he knows it has in his own experience rendered the use of forceps entirely unnecessary in five or six cases in the past year.

Without pituitrin he would have used forceps in all these cases.

There is a peculiar feature of this remedy that has not as yet been explained. It is powerless until the os is dilated and the head commences to descend. This makes it entirely useless to induce abortion in any stage of pregnancy. What is otherwise criminal abortion would be made simple and easy.

But as the best proof of the pudding is in the eating it, Davis presents the following verifications of its success by reporting a few cases from personal experience in its use:

January 25, 1914, Mrs. C. (colored), 7-para; called 7 P.M. Been in labor six hours. She stated: "I am always a couple of days in labor." Found os fully dilated. Pains weak and five minutes apart. Gave pituitrin 7.30 P.M. Seven-and-one-half-pound girl born 8 P.M.

As pituitrin is an absolute preventive of postpartum hemorrhage, she was spared that terrible experience in this case.

February 25, 1914, Mrs. V., 3-para. In both previous labors was three and four days in labor. Second labor terminated with forceps delivery. She is a strong, healthy woman of twenty-six years, well-formed and developed. Was called at 5 P.M. Pains ten minutes apart and weak. No dilatation of os. Told husband to call again when she was in full labor. Was called 11.30 P.M. Found os dilated ½ inch, pains of average strength and five minutes apart. Knowing her past history, Davis at once put into execution the plan he had laid out. He commenced a systematic dila-

tation of the os, using one and sometimes two fingers, giving her numerous intervals of rest. At 3.15 A.M. os fully dilated and head descended one inch. Administered pituitrin 3.15 A.M. Pains increased in force and frequency in a few minutes; in ten minutes were violent and prolonged; the last five minutes almost continuous. An 8½-pound girl was born at 4 A.M., exactly three-quarters of an hour after pituitrin was administered. The mother, husband, and nurse were simply astounded at the result. She was none the worse for the violent efforts and made a normal recovery. She was also subject to postpartum hemorrhage, which, of course, did not occur after pituitrin. What a contrast to her two previous deliveries, one three and the other four days!

Davis wants to say a few words here on dilating the os. He has for a great many years in making digital examination of women in full labor, when the os is closed or only slightly dilated, commenced a regular dilatation with one and at times with two fingers. This opens the os and brings on strong expulsive pains.

He has frequently attended women (before discovery of pituitrin) who would tell him: "Oh, doctor, I am in for another three days' siege." He almost invariably terminated the labor in from three to six hours by dilating the os every fifteen to thirty minutes. Some call this "bad obstetrics." "You might infect them," but when he thoroughly sterilizes his hand and the vulva, etc., of the woman and dilates he has, instead of several days of labor, a few hours and normal conditions following it, and is proud to say he has yet to have his first case of puerperal sepsis. When he attends a case with previous history of prolonged labor he dilates the os, then gives pituitrin, and has always had the happiest results. He does not report any more cases in detail, but states that four of his cases had a history of previous long and slow labors, and in all of them pituitrin closed the scene in from one-half to one hour with no bad results, and he used dilatation in every case but one. He has used it in fourteen cases; partly failed in one, and made complete failure in one.

He speaks of this that we may profit by his failure. In the first case the pains after six hours of labor completely stopped. A dose of pituitrin started them almost immediately; for ten minutes they were rapid and hard, and then stopped quite suddenly. He gave a second dose, and they at once started as before, were strong for ten minutes, then continued slowly for two hours until delivery. Patient refused a third dose.

The next case he used it on was two months later (in July, 1913), a primipara, pains not strong or effective, head well down, patient becoming exhausted. Gave two doses, one-half hour apart, with no effect whatever. Davis did not think the case warranted use of forceps, so let it terminate of its own accord. On reporting to a friend, who called soon after this, his partial and total failures, numbers were compared on Davis's box of pituitrin with his friend's price-list, and it was found the preparation was inert, as it was over one year old.

Bear this in mind. Do not purchase boxes of over six ampoules and order fresh box direct from house. It is contraindicated in cases with high blood-pressure—*i.e.*, nephritis, cardiac complications with goitre, arteriosclerosis, and cardiac weakness. As the blood-pressure is low in collapse and shock and in phthisis pulmonalis, its use is fully indicated in these conditions.

Pituitrin is far superior to ergot in postpartum hemorrhage, its action being almost immediate and contractions intense and prolonged.

Davis adds, by way of parenthesis, as a therapeutic remedy it has relieved seventy-five per cent of cases of anuria and dysuria following labor and gynecological operations in the Vienna General Polyclinic.

It is also frequently a valuable substitute for catheterization. It is a good prophylaxis for hemorrhage in Cæsarian section.

Its use, of course, does not apply in cases requiring podalic version and other manipulative measures, or where there is physical

obstruction or where operative measures are required; but Davis strongly advises us all, in cases in which labor is slow and tedious, pains short and ineffectual, and the poor woman simply worn out, to use a hypodermic injection of 1 Cc. of pituitrin, and we will earn the everlasting gratitude of the patient, and her friends will never forget the success.

THE CURE OF CANCER VIEWED IN THE LIGHT OF RECENT RADIO-BIOLOGICAL RESEARCH.

LAZARUS-BARLOW, in finishing what may be termed the academic portion of an address, which is published in the *British Medical Journal* of May 9, 1914, has placed before us what information he possesses tending toward the attainment of his ideal.

Microscopic examination by a competent morbid histologist should be made of every case subjected to radium treatment. When inserting radium into a subcutaneous tumor or applying radium to a superficial growth there is no insuperable difficulty in removing a small portion for such microscopic examination. The piece of tissue should be placed forthwith in 2-per-cent formol Müller, changed daily for seven days. By this fixative it is possible to stain for Altmann's granules—a matter, in his opinion, fundamental should a diagnosis between sarcoma and inflammatory tissue become necessary. Beckton has shown that all varieties of cells met with in inflammatory tissue contain Altmann's granules, whereas sarcoma cells (and epithelial malignant cells) are devoid of them. Lazarus-Barlow has had considerable experience with Beckton's method, and is convinced that by its aid diagnosis is possible in cases impossible to diagnose without it. So far as concerns the necessity of invoking the aid of an expert morbid histologist, he recalls at least two cases published as examples of successful treatment of malignant growths by radium in which the photomicrographs of the authors demonstrated non-malignant conditions with the greatest clearness.

The amount of radium in use should be verified periodically by a competent physicist. Lazarus-Barlow recalls a long, published, statistical paper expressing pessimistic views upon the action of radium on malignant growths in which the authors commenced the series of cases with two tubes stated to contain respectively 250 mg. and 150 mg. of radium bromide. Physical examination at a later date showed that the one tube contained 2½ mg., the other no radium whatever. Even short of so appalling a circumstance as that mentioned, emanation may escape from the tube containing the radium salt through a minute crack in the tube itself, or the solder with which it should be hermetically sealed, the crack developing in the course of use. Under such circumstances the effective value of the radium tube would be proportionately diminished.

It should be recognized that the metabolic processes of every patient after exposure to a considerable dose of radium are profoundly modified at least for a time. Supposing the cells of the growth have been killed by the rays, a mass of dead, dying and disorganizing tissue is being absorbed into the body at large during the period over which the irradiated mass is seen to be diminishing in size. Frequently such diminution in size is very rapid. It appears quite possible that some of the deaths that have occurred shortly after intense irradiation of a very large tumor may have depended upon the fact that a considerable quantity of highly toxic material was suddenly thrown upon a system already enfeebled by the disease. And this without consideration of the many changes that have been described as occurring in the body (for example, blood changes) as the result of irradiation. The sense of "well-being" that usually obtains during the first few days after exposure of a growth to a considerable dose of radium is quite compatible with a limited autointoxication.

For the same reason it would appear that surgical operations should not be undertaken after exposure of the patient to radium until sufficient time has been given

for a full reëstablishment of general health. There have been several cases in which surgical removal of a formerly inoperable growth which had been brought within operable limits by radium was followed by death of the patient not wholly explicable on ordinary surgical grounds. The temptation to operate in such cases must be very considerable, but the longer it can be resisted with safety to the patient the better the prospect.

For the same reason, too, repeated doses of irradiation should be given with great care and with sufficient intervals for recovery. This point is recognized by radiologists (Lazarus, *Berl. klin. Woch.*, 1914, Nos. 5 and 6).

Treatment with radium should not follow immediately upon operation. In spite of the fact that *x*-ray treatment following an operation appears to be beneficial in many cases, the very opposite is true with radium treatment. In the case of radium the explanation is not difficult. The powerfully destructive action of the radium rays is brought to play upon normal tissues (already damaged by operation), in the midst of which outlying foci of malignant cells are suspected to be present. Not only are those normal cells damaged whose duty it is to bring about the death and absorption of isolated foci of malignant cells, but also a more or less extensive necrosis of non-malignant (normal) tissue is produced with its attendant autointoxication and necessity for removal.

If radium treatment of a malignant new growth be decided upon, such treatment should not be preceded by complete removal of the main part of the growth. To a certain degree the proposition is the converse of the last. It is clear that if a tube of radium be placed in the midst of unremoved growth the danger of injury to surrounding normal tissues is less. But a much more important consideration underlies the advice. If malignant cells be necessary for the production of an autogenous antibody, and if such cells as will form the antibody must be still living (though with a profoundly altered metabolism), the chance of their production by means of the radium will largely depend upon the diameter of the mass of malignant cells through which the radium rays are able to act. Ideally, the most peripheral cells of the primary mass should be so reduced in vitality that they would lead to the protection of antibody sufficient to deal with any malignant cells that had been carried from the primary mass to distant parts before irradiation. In practice nothing approaching such an ideal result is likely to obtain if all but a few malignant cells be removed prior to irradiation. Naturally, too, the dose of irradiation — meaning thereby that complex of quantity of radium, length of exposure, nature and thickness of screen —necessary to produce the ideal result must vary infinitely with the infinite variety of growths presenting themselves for treatment. It is a hard saying, but the surgeon using radium must steer between the Scylla of (*a*) extensive destruction of normal and malignant tissue, with (*b*) no production of autogenous antibody, and the Charybdis of (*c*) insufficiently modified malignant cells, which are injured just enough to become "latent," and to lead to local recurrence at some later date, and of (*d*) malignant cells actually stimulated to an increased rapidity of growth. It is not very probable that every practitioner will be able to carry out radium treatment of malignant disease successfully.

Whatever may be the case in the future, for the present radium treatment of malignant disease should be confined to those cases for which modern surgery cannot offer a fair prospect by operation. In the case of frankly inoperable malignant disease it is unnecessary to urge at the present day that radium should be tried. In spite of disasters, disappointments, recurrences, pain from fibrosis so severe that the last state of the patient is worse than the first, a number of cases remain on record in which the result has been remarkably good. Without doubt the profession holds in radium an agent for the treatment of in-

operable cancer such as it has never held before. But if this be true for inoperable cases, should not radium be given a chance in preference to operation for cases in which surgery is notoriously unsatisfactory, though not impossible? Are the prospects of a patient with malignant disease of the tonsil or periosteal sarcoma any worse if he be treated with radium than if he be treated by operation? Does the small procedure entailed by the introduction of a tube of radium into the mass of growth, as against the large procedure of an extensive operation, count for nothing in the well-being of the patient? At the very best, should not the patient under such circumstances be presented with the two alternatives and allowed to make his choice?

But this is the furthest that one can go. At present, where modern surgical operation can offer a fair prospect of satisfactory result, the knife must be recommended in preference to every other agent, and this is as true for recurrences as for the primary disease. It must be remembered, however, that radium has only been known for sixteen years, and has been used in medicine for a far shorter period, whereas the surgeon's skill with the knife is the product of centuries.

Lazarus-Barlow states that here his task is finished. With feet sometimes on sure ground, sometimes on less certain ground, he has tried to bring to our eyes visions which eight years' radiobiological work have brought to him. He sees cancer as a protean manifestation of purposeless, disorderly cell growth brought into existence by the long-continued action of a cell stimulant, and he sees in radium and radiation an agency sufficient to produce cancer. But just as in the case of diphtheria the agent which produces the disease is also the agent whereby the specific cure for the disease is elaborated, so he is prepared to see cancer caused by radium and cancer cured by radium. Probably it matters little whether he foreshadows the true solution of the "cause of cancer" problem, but no man could wish for a greater labor than to have had a share in foreshadowing the true solution of the "cure of cancer" problem. For the sake of humanity it is to be hoped that those who believe in the essential capability of radium to "cure" cancer are right.

AUTOSERUM INJECTIONS IN CHRONIC PSORIASIS AND OTHER OBSTINATE SKIN DISEASES.

The *Boston Medical and Surgical Journal* of June 11, 1914, states that the latest thing in dermatology is the use of autoserum in the treatment of certain inveterate affections, as practiced during the past year by Linser, Uhlman, and other German authorities. In this procedure a suitable quantity of blood is drawn and centrifuged, and the serum thus obtained is injected intravenously. The method appears to be practically harmless, and its technique is simple. It has only very recently been introduced in America, and the credit for its first employment here is due to Gottheil of New York, who in the *Medical Record* of April 4 published reports of twelve cases—six of generalized psoriasis, three of generalized eczema, two of pemphigus, and one of leprosy—treated in his service at the City Hospital, Blackwells Island. The psoriasis and eczema cases received autogenous serum; the pemphigus and leprosy ones, that of relatives and that of a case of dermatolysis when it was available. In the first two diseases the injections were given once a week—three or four in number, of from 20 to 30 Cc. each, making about 100 Cc. in all—before the local treatment, of very mild character, was begun. In the pemphigus and leprosy cases more injections were employed. In the cases of psoriasis the results were wholly admirable, and in those of eczema less decisive, though marked improvement was observed, while in those of pemphigus, although reports of wonderful success in this affection have been published in Germany, there were practically no results at all. In the case of leprosy the benefit from the treatment was unmistakable and quite rapid,

though in this disease there is no reason to hope that it will do more than ameliorate the symptoms and improve the general condition.

A second communication on the subject was presented by Gottheil at the May meeting of the Medical Association of the Greater City of New York. Since the expiration of his term of service at the City Hospital, in January, the cases in which he has employed the treatment have been mostly in private practice, and the exigencies of office work have naturally rendered it impossible to administer it to any very large number of patients. This process is somewhat lengthy; the services of a nurse and an assistant, while not absolutely necessary, are desirable for the instrumental sterilization, the centrifuging, etc., and the various factors of personal convenience, expense, and individual possibilities and idiosyncrasies have to be taken into consideration. As in the first series, the most noteworthy were the psoriases, of which there were five. One of these patients was a physician, with the affection chiefly on the palms of the hands, and complicated by a severe radiodermatitis, the result of *x*-ray treatment, who withdrew from observation before the course of treatment was concluded. Excluding this case and judging from his experience in the other ten cases of the disease now treated, he expressed the positive conviction that in psoriasis the autoserum method has a peculiar influence for good, which enables one to clear off the skin in one-tenth the usual time with very weak and innocuous local medication, and without any internal treatment whatever. All the cases were old, extensive and recurrent instances of the disease.

In every case the treatment was well borne and caused no inconvenience, and in all the following effects were observed: Cessation of the appearance of new lesions and diminution in the elevation, redness, and scaling of the old ones, very rapid disappearance of the disease—in from three to seven days after the course of injections, under the mildest kind of local treatment (usually with 2½-per-cent chrysarobin petrolatum); and all this without any of the extremely troublesome general dermatitis ordinarily accompanying the chrysarobin full-strength medication. Such a gratifying picture he contrasts with the four to six weeks' treatment with ointments ranging up to 40 per cent of chrysarobin, the daily arsenical injections up to the very point of toleration, and the daily scrubbings with detergent soaps, etc., which constituted his former plan of procedure. The evidence therefore seems to him conclusive that in psoriasis the blood withdrawal and subsequent serum injection, one or both, have a very pronounced influence in modifying and ameliorating the disease and rendering the skin less susceptible to the irritating effects of local medication, and at the same time more responsive to its remedial action. Whether the treatment has any influence in preventing or delaying relapses, or on the general course of the disease, must be left to the future to disclose.

A few cases, including a chronic urticaria, a generalized lichen planus, a bad pustular acne with large abscesses, etc., are still under treatment, but Gottheil states that he is not prepared to report upon them as yet, except to say that in them the prospect looks encouraging. These cases are of such long duration, so recalcitrant to ordinary treatment, and so prone to show exacerbations and remissions, that he feels that great caution must be exercised in reporting results. He does, however, cite one remarkable case in this second series which is deserving of special mention. The patient had had prolonged *x*-ray treatment for some abdominal disorder six years ago, and this had resulted in the formation on the skin of the abdomen of an atrophic area, covered with telangiectases. Last autumn it began to show distinct signs of active inflammation, and at one time there seemed danger of a fatal termination. When Dr. Gottheil first saw him the entire area was necrotic, presenting the complete picture of

a chronic gangrenous raidodermatitis. Local treatment was almost impossible on account of the exquisite tenderness, and morphine had to be constantly resorted to on account of the intolerable pain present. As the result of one injection of 70 Cc., at the end of a week there was noted a wonderful improvement in the lesion and in the general condition of the patient, who for the first time had been able to sleep without the aid of narcotics. During the month following he was given four injections of nearly 100 Cc. each; there was a rapid and steady betterment, and he gained fifteen pounds, or more, in weight. The ulceration was now clean—all necrotic tissue having been removed—and two-thirds healed, and as the sensitiveness had disappeared vigorous stimulant local treatment was instituted. Since the results under the five injections had been so satisfactory, it was purposed giving him three more, by which time it was estimated that the ulceration would be entirely healed. After the sixth, however, he had a chill, followed by fever and sweating, and as similar phenomena of even greater severity resulted from a seventh injection, the serum treatment was discontinued. The constitutional reaction produced was thought to be probably of the nature of "serum sickness," due to the sensitizing of the organism by the previous injections. At the present time the ulceration is but one-quarter its original size and is slowly healing under local treatment alone. On the whole, the results observed in this case are certainly noteworthy; though, as therapeutic work of this kind is as yet experimental and without data, it is possible that the injections were too large or too near together.

Among those who have taken up the autoserum treatment are Fordyce, MacKee, and Howard Fox. In his experience with it Fox has had eighteen cases: fifteen of psoriasis, two of eczema, and one of herpetiform dermatitis. In the eczema cases the results have been unsatisfactory, but in the herpetiform dermatitis somewhat more encouraging, while in the cases of psoriasis they have proved exceedingly gratifying. He has given rather smaller doses of serum than Gottheil, and finds local treatment after the injections to be essential. In his psoriasis cases he employed chrysarobin, and in some instances also covered the lesions with rubber cloth, but the final results have been such as could by no means have been obtained from local treatment alone.

MacKee has employed the treatment in fourteen cases. Eleven of these were of inveterate psoriasis, and he noted in them the same admirable results observed by Gottheil and Fox. Like the latter, he uses the smaller doses of serum, and he usually gives about six injections, at a week's interval, before resorting to local treatment. His local medication is even milder than that of Gottheil. In two cases of herpetiform dermatitis which had resisted all other treatment for twelve years, the skin entirely cleared up in six or eight weeks. Whether the result will be permanent remains to be seen. He has observed no serum sickness, and speaks very encouragingly of this new treatment, which he has found easy to carry out and apparently free from danger.

ADRENALIN IN ASTHMA.

HERTZ in the *British Medical Journal* of May 2, 1914, recalls the fact that the effects of subcutaneous injections of adrenalin have recently been discussed in a number of papers. From a considerable personal experience Hertz has come to the conclusion that the dose generally used for asthmatic attacks is much greater than is necessary. The first dose he ever gave himself, about two years ago, was 3 minims of 1-in-1000 solution of adrenalin chloride. The relief of the asthma was almost instantaneous, but he felt extremely ill for some minutes, his hands shook so much that he could hardly put the syringe away, and his pulse became very rapid. Since that date he has given himself a large number of injections, but never more than 2 minims, and rarely

more than one; for slight attacks half a minim has been sufficient. With these small doses the only effect he ever experienced is relief of the asthma, and this is invariable. No attack has kept him awake for longer than five minutes, except on one occasion when he broke the syringe, and was consequently awake all night. His pulse is hardly accelerated, and he does not feel the slightest discomfort. The relief is so rapid that he falls asleep within a minute or two of putting the syringe back into its case. Small doses of this kind have the further advantage that they are unlikely to have any permanent ill effect, such as the production of atheroma. Even if three or four doses are required in twenty-four hours, which is most unusual, the total amount injected is less than is commonly recommended for a single injection.

He adds that, so far as his experience goes, similar small doses have generally proved effective in other patients.

THE ACTION OF DRUGS IN HEART FAILURE.

In the *Australian Medical Journal* of April 18, 1914, TURNBULL says that of recent years much work has been done, both experimentally and clinically, in the effort to determine by precise methods the action of drugs upon the heart. It is perhaps not too much to say that the only drugs in general use which have a definite and demonstrable effect on the heart are those of the digitalis group. The supposed effects of strychnine, camphor, and the like cannot be actually demonstrated, and remain still a pious belief of the clinician, though efforts are constantly being made to show some definite action. Mackenzie has pointed out that it is rare for a tincture of digitalis, procured in the ordinary way from a reputable druggist, to be inert, but that the reaction of the heart to the drug varies with the nature of the lesion, and his own and other observers' work has established this latter fact thoroughly, and has provided us with some definite knowledge to aid us in using the drug. It is here perhaps that the polygraph will usually prove amply sufficient as a guide to the results of digitalis in treatment. The best results from digitalis treatment are, of course, got in cases of auricular fibrillation, especially where the lesion is an old, rheumatic one, but at times, in cases of this form of arrhythmia, remarkably good results may be obtained even in the hearts of old people, and in those in whom the lesion is due to a toxin —*e.g.*, exophthalmic goitre.

In spite of such careful work by many observers, the probable results of digitalis administration in cases in which the rhythm is normal are very difficult to forecast, but there is undoubtedly a definite action on heart muscle as well as a powerful vagal stimulation, as is shown by the inability of atropine to remove all the results of digitalis. Until our knowledge is much more precise, the wisest course to pursue is to use digitalis in all cases of heart failure with dilatation and dropsy, no matter what is the state of the heart, provided rest and good general treatment fail to allow of the recovery of the organ. In any case in which it is definitely considered that digitalis is indicated, and should react favorably, it is essential that the drug be pushed until the symptoms of poisoning—*e.g.*, headache, nausea, giddiness, etc.—are produced, before it is discarded as useless. It is not uncommon to see cases of auricular fibrillation which have failed to react to a dose of tincture of digitalis, 10 minims, t.i.d., continued for some weeks, react promptly and satisfactorily to twice the dose. Of course, if a perfect result is obtained earlier, there is no need to push the drug till unpleasant symptoms are procured, but often the symptoms are noted before any cardiac effect has become obvious. The drug is then stopped for a while, and the pulse is frequently found to be slowing satisfactorily and the symptoms of heart failure disappearing, the improvement having apparently set in almost immediately after the onset of the symptoms of full drug dosage. As soon as the symptoms of full dos-

age appear, the drug should be withheld for a day or two, and then given again in smaller doses, just sufficient being used to retain the good effects.

It is doubtful whether any absolute contraindication to digitalis exists, since in some cases in which it produces undesirable symptoms or signs its omission is accompanied by progressive heart failure, but certain signs are danger-signals and indicate that the drug must be stopped if possible, or at least used with very special care. The chief of these are:

(*a*) Partial heart-block or increased a-c interval, due to an incomplete lesion of the a-v bundle. In these cases digitalis, partly by a direct muscular action, and very largely by its action on the vagus, increases the difficulty of conduction, and may increase the block or cause a previously lengthened conduction period to increase, till some impulses are blocked. Frequently where there is heart failure, the patient may feel much relieved while under digitalis, in spite of the increased difficulty of conduction, and the drug may need to be continued, though at times a combination with atropine is successful in abolishing the vagal effect.

(*b*) Pulsus alternans. In cases in which this condition is present, digitalis should be used very cautiously, and only where the patient is under careful observation. It often happens that the patient feels distinctly improved for a day or two and then complains of a feeling of exhaustion, which increases while the drug is continued. This is a symptom of great gravity, and if not attended to fatal results may ensue.

(*c*) Extrasystoles have been said to be banished by digitalis, but the much more common experience is that their numbers are increased by the drug, and its administration may certainly be followed by their appearance in cases in which they were previously absent. In cases of auricular fibrillation the well-known coupled rhythm produced by digitalis is due to the incidence of a ventricular extrasystole following each response to supraventricular stimuli, and in these cases the appearance of the premature beats must be regarded as a danger-signal, as several sudden and unexpected deaths have occurred in such cases, probably from ventricular fibrillation. At times the symptoms of heart failure become marked again immediately the drug is stopped, but here the physician must use his own judgment in each individual case, or decide which of two evils is the greater, but it is extremely important that he should at once recognize the coupled beat and appreciate its significance and dangers.

High blood-pressure was at one time considered to be a contraindication to digitalis, but much evidence has accumulated in opposition to this view, and there is no doubt that cases with very high blood-pressure are frequently greatly benefited by the drug. In many cases at least the blood-pressure rises as the heart fails, and if the heart is slowed and strengthened the circulatory balance is readjusted and the blood-pressure falls again. The administration of digitalis will only very rarely be found to cause an appreciable rise of blood-pressure in clinical cases.

Myocardial degeneration is certainly no contraindication to the use of digitalis, which often is of great value in cases in which the heart muscle is much degenerated. The value or otherwise of digitalis to a heart laboring in the grip of a toxin is still uncertain, and much work requires to be done to settle this point. However, we know it may be of great value at times in exophthalmic goitre and pneumonia, and at times also in acute rheumatism, and there is no doubt that it should be thoroughly tried where the heart is progressively failing in spite of treatment in any acute disease.

The other drugs of the digitalis group act similarly, but less strongly and certainly than digitalis, and no advantage seems to be got by their substitution for it.

Though strophanthus and squills seem less liable to irritate the stomach, they are apparently more irritant to the intestine. Strophanthus is less readily absorbed from

the intestine than digitalis, and this irregularity and difficulty of absorption make it more difficult to handle effectively, and usually much larger doses are required, while squills is irregular in absorption, weak in action when administered by the mouth in man, and is very rarely required where digitalis can be used. If a very rapid action is required in cases of emergency, strophanthin in doses of 1/250 to 1/200 grain given in about a drachm of saline solution into a vein will act strongly in about five to fifteen minutes. The dose may be repeated once or twice at about three-hourly intervals. Not infrequently in cases in which dropsy is considerable it fails to clear up even when digitalis is pushed, and here astonishing results are often got by the exhibition of theocin sodium acetate, given in one dose of 10 to 15 grains or in three doses of 4 grains each within a period of twelve hours. The patient should be well under the influence of digitalis before the theocin is given, and then a full dose is administered within twelve hours, and no more until its effect is exhausted, as it is distinctly a renal irritant, and no good effect is obtained by continued administration.

Turnbull's remarks on diagnosis and treatment have dealt almost entirely with advances due to graphic methods concerned in the main with the time relations of the heart-beats and of events in the cardiac cycle, and to a lesser extent with the origin and direction of passage through the heart muscle of impulses giving rise to the contractions.

There is a tremendous field to be covered as regards the work of the heart. At present we have to depend entirely on commonsense methods to estimate its capacity for work. No short-cuts here have so far proved of the slightest value, and the only way is to carefully inquire into subjective symptoms caused by the ordinary activities of life, and to test the results of reasonable exertion and the heart's capacity to satisfactorily react to a call for work.

The prime factor in the maintenance of the circulation is an efficient output from the left ventricle. Arterial resistance affords no motive power; it is merely regulatory. Ventricular output can be measured experimentally in animals, and there are grounds for expecting that it will soon be satisfactorily estimated in man. It depends upon two factors: (1) The efficient driving power of the heart muscle. (2) Proper diastolic filling of the heart.

The latter is chiefly conditioned by the pressure in the venous side of the circulation, our knowledge of the mechanism of which is far from complete. Even such knowledge as we have already derived from experimental work we are unable to apply clinically, since in man we cannot measure pressures or accurately note changes on this side, and it is of such enormous importance to the carrying on of a satisfactory circulation that our work will never be brought to a proper condition of accuracy till this great problem is solved.

PUTUITRIN IN LABOR.

HENDLEY writes to the *British Medical Journal* of May 16, 1914, on this topic.

As regards dosage, Hendley's experience has been that 0.5 Cc. is too small a dose even for an initial one, and that 0.75 Cc. is a suitable dose to commence with and a safe one too. The personal factor enters largely into the question of dosage, as some women respond far more readily to the exhibition of this extract than others; so that it is expedient to experiment with each patient individually to find out the dose most suitable to each. It is by averaging out the best results from his series that Hendley has arrived at the figure 0.75 Cc. as the best and safest preliminary dose. If the uterus does not respond readily to this initial dose, he considers that it is safe to increase the dose to the full 1 Cc. He has not experienced the falling off of the contractions at the end of thirty or forty minutes mentioned by others; possibly this may be due to using the larger doses. He frankly confesses that the small dose of 0.5 Cc. has proved useless in his hands.

The nature of the contractions of the uterus does not seem to him to be "tonic" or "continued," but "regularly rhythmical;" but compared with the average natural contractions they are more powerful and more frequent. Hendley does not hesitate to use digital dilatation to help the cervix in the interval between the pains, nor instruments at a later stage, if he thinks the patient requires their introduction. In short, he looks upon pituitrin as a necessary adjuvant to parturition in normal labors. It is unfair to any medicament to assume that its use must necessarily be solitary—that is, that it must be used alone. He looks upon pituitrin as upon other contents of his bag, as "a ready help in time of trouble."

He has had two stillbirths in his series. In one, the child's head was born fully fifteen minutes before the shoulders. The child made several convulsive efforts at respiration immediately after delivery of the head. The child was, he thinks, undoubtedly asphyxiated by pressure on the cord while the body was in the canal. The other case was one in which there were extensive macerations of the skin on the head and trunk, obvious signs of prenatal death. On five or six occasions he has encountered partial asphyxia of the child, but artificial respiration has always brought the patients around, and they have subsequently progressed satisfactorily enough.

As to contraindications for the administration of pituitrin, he looks upon any case in which obstruction is likely as an impossible case for its employment. Under this category he places:

1. Face presentations.
2. Frontal presentations.
3. Transverse presentations, etc.
4. Breech presentations.
5. Pelvic contractions.
6. Malformations (hydrocephalus, etc.)
7. Polypi, especially fibroid.

Hendley thinks this list is fairly comprehensive.

As to positive indications, these include any vertex presentations, uterine inertia (primary), placenta previa, especially where the Champetier de Ribes bag can be introduced into the cervix, puerperal eclampsia, where its diuretic action should prove of special service, and exophthalmic goitre.

Finally, he is convinced that careful selection of cases is necessary. Carefulness, too, in details, both of administration of the preparation and management of the case, is essential to success in its employment.

THE ANTAGONISM OF POISONS.

The *Medical Record* of June 6, 1914, reminds us that the subject of the mutual antagonism of poisons is an extremely interesting one. In its simplest phase this antagonism has been explained as the result either of the chemical interaction of the poisons themselves, or of the specific physiological effect which these poisons may produce. In other words, the antagonism may be chemical or it may be physiological. Upon this classification is based the entire system of modern toxicology. According to the recent discoveries of physical chemistry the specific action of poisons has been explained on the basis of the permeability of the cell membranes, of differences in solvent power of these membranes, and of differences in surface area causing differences in absorption. According to J. N. Langley (*Journal of Physiology,* March 31, 1914) none of these explanations accounts for this specific action adequately. But while advocating the chemical theory as being at present the one most in accordance with the facts, he does not consider it to be more than a tentative explanation. A theory which has had considerable vogue for a long time is that which holds that poisons having a specific action owe this property to their forming chemical compounds with certain tissues. The antagonism between physostigmine and atropine and that between pilocarpine and atropine are explained by Langley on the hypothesis that such antagonistic poisons form chemical compounds with some constituent in the

tissues, that the compounds are reversible, and that the amount of each depends on the relative mass of the two poisons.

Langley subjected this theory to experimental analysis in studying the antagonism of curare and nicotine in skeletal muscles. He found that the antagonism of curare to the fibrillary twitchings and to the tonic contraction caused by nicotine in the neural region of muscles follows different laws. Though curare reduces both effects in proportion to its percentage (*i.e.*, in proportion to the concentration of its curarine), the abolition of the twitchings takes place with a definite percentage of curare for a considerable range of variation in the concentration of the nicotine. On the other hand, the abolition of an immediate tonic contraction by curare is strictly dependent on the ratio of the percentage of curare to that of nicotine. These conclusions were based chiefly on observations made on twitchings in the sartorius muscle, and on the tonic contraction in the rectus abdominis. There is a certain ratio between the percentage of curare and that of nicotine at which nicotine just fails to produce an immediate tonic contraction. The action of curare is at its fastest at first, and the rate of action then decreases. Curare does not appreciably antagonize the effect of nicotine on the non-neural portion of the muscle substance; the antagonism is confined to the special substance or mechanism of the neural region. When a muscle is immersed in curare after having been immersed in nicotine, the extent of the relaxation produced depends on several factors: it is less the higher the percentage of the nicotine, and, within certain limits, the longer the duration of its action; it is the greater the higher the percentage of the curare. Other things being equal, the extent of the relaxation depends on the relative concentration of curarine and nicotine. If the ratio of the percentage of curare to nicotine is below the equivalent percentage ratio the relaxation produced is trivial, and after a certain duration of action of the stronger solutions of nicotine, curare in higher percentage than the equivalent ratio also causes a trivial relaxation only. Thus curare antagonizes the stimulating action of nicotine to a degree which depends upon the relative concentration of curare and nicotine, but it has no certain effect upon the contracture produced by nicotine.

Upon the basis of these experiments the general conclusions are reached that curare and nicotine produce their effects by an action on the neural region of the muscle fiber and not by an action on the nerve endings, so that the explanation of the specific action must depend upon a difference in the neural and non-neural region of the muscle fibers.

PITUITRIN IN OBSTETRICS, WITH AN ANALYSIS OF FORTY CASES.

SEELEY, in the *Journal of the Michigan State Medical Society* for July, 1914, concludes that:

1. Pituitrin is best administered intramuscularly.

2. The initial dose should not exceed one to one and one-half cubic centimeters. Large doses during labor are equivalent to ergot and should not be given.

3. In induction of labor at term the results are not satisfactory.

4. In the presence of an undilated cervix pituitrin should be given only in exceptional cases.

5. The best results are obtained in the second stage of labor.

6. In an occasional case the preparation is apparently inert.

7. It should not be given in the presence of serious obstruction to labor.

8. In moderately contracted pelves, and especially in outlet contraction, the results are good.

9. The forceps operation may often be averted or rendered easier by the proper use of pituitrin.

10. In Cæsarian section pituitrin should not be given before delivery of the child.

11. The effects on pulse and blood-pressure are not constant, but pituitrin should

not be used in conditions associated with high blood-pressure.

12. Urination after delivery seems to be facilitated.

13. The administration is sometimes followed by untoward symptoms.

14. In postpartum hemorrhage the results are not better than those obtained by the use of ergot.

15. Pituitrin has no place in normal obstetrics, and should be given only in the presence of sufficient indication—*e.g.*, inertia, moderately contracted pelves, etc.

A SUBSTITUTE FOR CARBON DIOXIDE SNOW.

E. SOMMER (*Schweizerische Rundschau für Medizin,* Jan. 10, 1914) advocates the use of acidum trichloraceticum as a substitute for carbon dioxide snow in dermatology. The latter has many disadvantages. It does not last long, and cannot, therefore, be despatched afar. The hire of cylinders is expensive, and their manipulation intricate. The author has found that trichloracetic acid is in many respects more satisfactory. It forms colorless crystals which easily volatilize. Its melting point is 56° C., and its boiling point is between 192° and 195°. It is soluble in water, spirits of wine, and ether. It is kept in a brown, glass-stoppered bottle, and can be used in the form of crystals or a concentrated solution. It is so stabile when kept carefully corked in a dry place that it lasts for years.

The solution, which is more easily managed than the crystals, should be poured out into a watch-glass, care being taken not to contaminate the fingers. A drop is taken on a glass rod and placed on the skin, where it is lightly rubbed or pressed with the rod. This pressure is necessary to complete contact of the drug with the skin. The size and shape of the glass rod varies with the character of the area to be treated. When it is small, a small rod, with or without a bulbous end, should be used; when it is large, a thick rod with a bulbous or flat, shelving end should be used. The penetration of the drug being directly proportional to the pressure applied, this is increased when the disease is deep-seated.

To protect the skin in the neighborhood of the area to be treated a coating of collodion or mastisol should be applied. The latter is preferable, as it can be used as a dressing after the drug has been applied. This is allowed to dry, and though a dressing is subsequently not essential, it is useful. The area treated rapidly turns white, but it does not show the vesicles which may follow the application of carbon dioxide snow. The discoloration of the skin is followed by the formation of crusts, which fall off in one to two weeks. The treatment should not be repeated before the reaction has completely passed off. Often one application is sufficient.

The conditions suitable for the treatment are new growths of the skin, warts, keloids, pigmentations, nevi, freckles, tattoo marks, etc. The advantages of the treatment are its cheapness and simplicity. Neither great technical skill nor an elaborate apparatus is required. The drug is always ready for use and is not easily decomposed. The strength of the reaction can be graduated by the strength of the solution and by the pressure applied. The drug does not, however, have such a penetrative action as carbon dioxide snow. The acid causes but little pain, but occasionally during or after its application a slight burning sensation is felt. The cosmetic results are good, and the author has seen no undesirable effects.—*British Medical Journal,* May 2, 1914.

THE USE OF CONCENTRATED NEOSALVARSAN FROM A CLINICAL AND SEROLOGICAL STANDPOINT.

BLAISDELL, in the *Boston Medical and Surgical Journal* of June 4, 1914, concludes an article with this summary:

Technique.—(1) Intravenous injection of 20 Cc. of fluid with glass syringe, needle and Swift holder most simple method. (2) A steady hand and careful adjustment of

syringe to needle necessary. (3) The time of actual injection averaged thirty seconds.

Sequelæ.—(1) Three hundred and forty-one injections given. (2) No patient required the use of the recovery rooms because of untoward sequelæ. (3) Dizziness, headaches, and diarrhea in mild degree recorded in some instances during the first twenty-four hours, especially after the first injection. (4) Experienced operator and strict aseptic technique render danger negligible.

Therapeutic Efficiency.—(1) Twenty-four untreated cases were given four injections of concentrated neosalvarsan, dosage 0.45 gramme at weekly intervals, followed by a Wassermann seven days later. (2) Active symptoms and lesions yielded readily. (3) The Wassermann reaction was little changed. (4) Active early cases or long-standing cases showed the least serological change. (5) Serologically, the concentrated neosalvarsan was inferior to the old salvarsan.

ON TINCTURE OF DIGITALIS (B. P.): ITS ACTIVITY AND STABILITY.

The *British Medical Journal* of June 20, 1914, contains an article by SYMES on this subject. He reaches these conclusions:

1. Few tinctures of digitalis are, initially, below standard.

2. Tinctures, not below standard, vary 200 to 300 per cent in initial activity.

3. All such tinctures, after a variable period of constant activity, undergo deterioration, which may commence within a month of manufacture, and may amount in a year to 70 per cent, or more, of their initial activity.

4. Concentrated alcoholic extracts of digitalis leaf compare favorably with, and behave as, the British Pharmacopœia tincture.

5. Solutions of crystalline French digitalis (German digitoxin) are more stable than the above.

6. Commercial "non-alcoholic" tinctures, and allied preparations, are not trustworthy.

BLOCKING THE SYMPATHETIC BY A METHOD OTHER THAN SPINAL ANESTHESIA.

Under this title LYNCH (*American Journal of Obstetrics and Diseases of Women and Children,* February, 1914) gives the following method:

After preliminary administration of morphine and hyoscine and the placing of the patient in the left Sims position, a needle is inserted in the sacral canal. The point of insertion is determined by following the sacral spinous processes until they are found lacking. Slightly above this point will be found the opening of the canal. If the canal opens near the sacrococcygeal joint this point is selected. The canal is reached at a depth of about one inch. Eight Cc. of 1:500 cocaine solution is injected. Thereupon the needle is closed by a trocar and left *in situ.* If after fifteen minutes a satisfactory anesthesia is not established, it may be necessary to inject 1 or 2 Cc. more.

Having opened the abdomen and packed off the small intestine, the next step consists in blocking off the sympathetic nerves in the triangular space bounded by the iliac vessels. An incision is made on one side at the apex of the common iliac arteries, slightly above the bifurcation of the aorta. A probe-pointed needle is passed in between these arteries, and this region is infiltrated with a solution of 1-per-cent novocaine. If needful the inferior mesenteric plexus can also be treated in the same manner. After this has been accomplished the sympathetic nervous system of the entire hypogastric plexus is blocked. By means of a scissors curved on the flat, the left mesosigmoid is slit as far down as the bladder—or uterus, as the case may be—and continued around on the anterior surface of the rectum to the other side, thus separating the rectum from the bladder or uterus. The right leaf of the mesosigmoid is treated in the same manner. When this has been done the sigmoidal artery is double-tied close to its root. Afterward the superior hemorrhoidal artery is double-tied, and the surgeon, with a scissors curved on the flat, proceeds to scoop out all the fat and glands between

the folds of the proximal mesosigmoid. This scooping process continues from the promontory of the sacrum to the levator ani muscle. After the middle hemorrhoidal artery, which is a branch of the obturator, has been clamped, both leaves of the mesentery are cut, and this cutting process is carried down to the levator muscle. The rectum can now be readily separated from the prostate and urethra as far down as the levator ani muscle. The tumor and sigmoid are then packed down in the pelvis, and the peritoneum dissected up from the side of the pelvis and attached to the former peritoneal attachment. All raw surfaces are covered by attaching the peritoneum to the gut, either by a continuous catgut suture or by several interrupted sutures, and the abdomen closed in the usual manner.

After the abdomen has been closed the patient is placed in the lithotomy position and the tumor removed through a perineal incision running about ¼ inch back of the posterior commissure to the sacrococcygeal joint. The mucous membrane may then be dissected from the anus as in the Whitehead operation, and the dissection continued until the bowel is thoroughly freed, when the tumor is removed and the gut sutured to the skin.

The author gives no statistics as to his success with this method.

THE EFFECT OF A PLUG OF IODOFORM GAUZE ACCIDENTALLY LEFT IN THE ABDOMEN.

MAYLARD (*Lancet,* Feb. 28, 1914) reports the following interesting case:

A married woman, aged thirty-three years, suffering from gall-stones, was operated upon, and 22 stones were removed from the gall-bladder and one impacted stone from the common duct. She left the infirmary quite well, and remained so for four years, until 1910, when she again suffered from symptoms of cholelithiasis. These attacks continuing, she was admitted for the second time, and a stone was removed from the ampulla of Vater. At the operation a long strip of iodoform gauze was conducted down to the sutured wound in the ampulla and led out of the parietal wound. The wound healed and the patient left the infirmary well.

A fortnight later, however, she began to be troubled with a "soreness in the right side and a feeling of fulness in the stomach." The symptoms which gradually developed were all suggestive of pyloric obstruction, and after admission to the infirmary there were succussion and well-marked gastric peristalsis. The inference was that the obstruction was due to adhesions, of which there was abundance encountered both at the first and still more at the second operation. The abdomen was opened with the object of performing the usual no-loop operation of posterior gastrojejunostomy. On pulling up the first part of the jejunum for anastomosis with the stomach a most unusual condition of the bowel was found to exist. It was greatly increased in size, and the walls were thickened and congested. An indefinite feeling of something within the canal was felt. The pyloric aperture was observed to be widely dilated, as also the first part of the duodenum. On opening the jejunum a foreign substance was at once seen which, when withdrawn, proved to be a piece of gauze about 15 inches in length. One part of the elongated mass passed up into the duodenum, while the other extended down the bowel. The upper end presented a large knob-like appearance somewhat whitish in color and practically devoid of smell; the lower end was brownish in color and fecal in odor. The patient made a complete recovery and left the institution well.

The piece of iodoform gauze used at the second operation led down to the sutured incision in the ampulla of Vater. During the subsequent dressings of the case the question was once raised regarding the removal of the plug. Neither dressers nor nurses had seen it; and as no indication of its presence existed at the wound it was taken for granted that it must have been unknowingly drawn out during one of the removals of the outer dressings to which it had become adherent. The subsequent fate

of the plug must have been that, by pressure, it had ulcerated into the second portion of the duodenum; and once admitted it had been gradually carried on through the normal peristalsis of the bowel. It seems somewhat strange that, having obtained complete admission, it was not carried on much further, even to the extent of being finally ejected per anum. However, although its removal was easy, it had led to impaction and partial obstruction of the canal.

The case is interesting as showing one way in which nature is capable of successfully overcoming accidents of the kind, and doubtless had the plug been smaller it would have passed per anum and nobody have been any the wiser.

NEW METHODS OF SEROLOGIC DIAGNOSIS OF TUMORS.

HALPERN (quoted in the *Journal de Chirurgie,* tome xii, No. 3, 1914) has conducted a study upon serum diagnosis of tumors with the following results:

In many cases of cancer a test of the antitryptic power of the serum (method of Brieger and Trebing) has given positive results. The reaction, however, was not specific since other diseases give a high antitryptic manifestation. The only value of this test lies in the fact that its absence suggests that the affection under study is not cancer. The method of Neubauer and Fisher, applicable only to the diagnosis of cancer of the stomach, is based on the existence in the gastric juice of cancer of a ferment capable of doubling the synthetic diapetides of Fisher. The synthetic test gave in seven cases six positive results. It is also positive in cases of chronic gastritis and ulcer. A search of the blood for the same ferment has given contradictory results. A study of the hemolysins in the blood serum gave twelve positive results in cancer. Also this test is positive in cases of leukemia, tuberculosis, and syphilis. The method of Freund and Kaminer involves a most delicate technique. It is based upon the fact that normal blood serum destroys cancer cells, these remaining intact in cancer serum. A mixture of cancer serum and extract of cancer causes turbidity, which does not appear when normal serum is mixed with extract of cancer. In 20 cancer cases results were positive in 14. In 11 non-cancerous patients the results were positive in three.

d'Ascoli's meiostagmin-reaction gave 39 positive reactions in 46 cases of cancer, and two in 25 non-cancerous patients. Many observers have reported similar results. Indeed, 82 per cent of reactions were given as the result of a study in 399 cancers, and 9 per cent in 548 non-cancerous subjects.

Dungern has studied the deviation of complement and has announced that there were 91 positive results in 102 cancer subjects, and 11 in 16 sarcomas; that all the results were negative in 92 subjects without tumor.

Halpern has found 71 positive results in 79 cancers and four positives in 56 patients not subject to cancer. Abderhalden's reaction gave Halpern less than 30 per cent positive results.

As a result of his study Halpern concludes that there is at the present time no specific reaction for cancer.

THE ROENTGEN RAY IN DUODENAL DIAGNOSIS.

SKINNER (*Interstate Medical Journal,* February, 1914) in a collective abstract on this subject quotes Carman to the effect that the Roentgen evidence of duodenal ulcer is as follows:

Early free opening of the pylorus, with early clearance of the stomach; lagging of bismuth in the duodenum; residue in the stomach (sometimes in the duodenum) after six hours, if there is an obstruction from scar contraction; pressure-tender point over the duodenum; dilatation of the cap; irregular outline of the cap or duodenum; diverticulum of perforating ulcer; vigorous peristalsis, especially if there is obstruction.

Carman incorporates the following reservations in his article: "Radiological diag-

nosis of duodenal ulcer, unless corroborated by clinical data, is in most instances a mere guess. Excluding obstructive cases, the Roentgen-ray appearance of duodenal ulcer is often seen when the actual lesion is elsewhere, as in the appendix or gall-bladder.

The Roentgen-ray findings, unless extraordinarily marked and decisive, should be correlated with the anamnesis, the laboratory reports, the clinical data, and always with common sense.

Barclay has confessed to an inability definitely to determine a symptom-complex which he terms duodenal irritation:

The stomach always exhibits good tone, even if ptosis is present. Hypertonus is often noted.

The peristalsis is more active than normal, especially when the food has commenced to pass through the duodenum.

The food begins to leave the stomach almost at once, and as a rule continues to pass out very rapidly until the stomach is empty.

The pyloric relaxation is so complete that large masses of food are seen passing through the duodenum instead of the fine, almost imperceptible stream that can only be detected with certainty by means of an instantaneous radiogram. In certain cases a separate bolus is seen remaining, apparently in a pocket, in the duodenum.

The value of this symptom-complex is considerable when we realize that operative analysis of Barclay's 39 reported cases resulted as follows: Duodenal ulceration, 14 cases; cicatrization of the duodenum, 7 cases; adhesions about duodenum (generally in connection with gall-bladder), 13 cases; carcinoma of this region, 3 cases; appendicitis, abscess, 1 case; appendix fixed by adhesions near duodenum, 1 case.

He says the two signs usually emphasized are (1) abnormally marked peristalsis, and (2) hypermotility. The first is due to muscular hypertrophy following pyloric spasm, but no diagnosis of duodenal ulcer should be made on the presence of marked peristalsis alone, as abnormal nervous influence may produce this as well as pyloric stenosis due to other cause than cicatricial ulcer. Exaggerated peristalsis may be absent in many cases which prove at operation to be duodenal ulcer, and he regards this sign as merely suggestive.

The effect of adhesions produced during the healing of an old duodenal ulcer cannot always be differentiated from the actual defect due to the ulcer itself, or from the crater of the cicatrix. In all these conditions, however, although we may have the same smoothly-rounded or irregular defect, we can tell that the duodenum is not normal, but that it is definitely pathological. In questions of fixation of the duodenum by periduodenitis, the fluoroscope does play an important part. By its use we can tell whether or not an apparently right-sided position of the stomach is due to accident, or to actual fixation of the duodenum to the region of the gall-bladder, or the colon. It is only, however, by following out the above-mentioned technique, with serial Roentgen plates, that we can determine whether these adhesions are due to an old healed ulcer of the duodenum or to gall-bladder disease.

"A 'normal' bismuth mass in the duodenum means, of course, that there are no cicatricial contractions, no adhesions, perforations, sacculations, etc. The only thing that could possibly be present is a simple peptic erosion of the mucous membrane not involving the muscularis. This condition, while quite common in simple gastric ulcer, is practically unknown with duodenal ulcer. The latter very soon becomes callous, and will then show its effect upon the bismuth mass. At any rate, a case that is manifesting itself by any clinical symptoms is sure to be more than a simple erosion." Moynihan, in his monograph on duodenal ulcer, says: "A duodenal ulcer, which has been the cause of protracted and recurrent symptoms, is always visible from the outside of the intestine, is always palpable, and therefore is always demonstrable. To this statement there are no exceptions. If this be true, an ulcer which can be seen from the outside and can be palpated at operation is sure to disturb the outlines of the contained bismuth mass. We can therefore safely

neglect the possibility of simple mucous membrane erosion, and flatly state that a duodenum which can be demonstrated as anatomically normal by our method does not contain an ulcer, at least an ulcer which calls for surgical interference."

There should be no dispute as to whether the fluoroscopic or the radiographic technique is necessary in an abdominal Roentgen examination because one supplements the other. In duodenal diagnosis the radiograph becomes absolutely necessary because of the increased detail of filling-defects. It will probably be necessary for one pursuing the Cole technique without the advantage of direct fluoroscopic inspection to make the large series of exposures at short intervals. But to one who pursues what may be termed Continental fluoroscopy it will only be necessary to take a few interval or repeated exposures of the duodenum to arrive at George's method and results. Attention to the fluoroscopic symptom-complex of duodenal irritation as outlined by Barclay, and the interpretation of plates according to Cole and George, will promote the reliable return of diagnostic data upon the duodenum.

THE INSUFFICIENCY OF THE ILEOCECAL VALVE IN X-RAY PHOTOGRAPH.

MARCUSE (*American Journal of Surgery*, May, 1914) observes that there are two ways of examining the intestines by the *x*-rays. The first is the filling per os by the Rieder contrast meal, consisting of 350 grammes of gruel and 50 grammes of carbonate (not nitrate) of bismuth or 75 grains of sulphate of barium. It is necessary to get a pure preparation of the barium, as there have been fatal intoxications from soluble salts. Such accidents can be avoided by prescribing barium sulphate purissimum for *x*-ray purposes. If the stomach and the small intestine are normal, they will both be emptied six hours after such a contrast meal, and the whole bismuth shadows will be found in the colon ascendens, and by further examinations, after 9, 12, or 24 hours, one will be able to examine gradually the whole colon. But if there is a stricture in the stomach or in the small intestine, bismuth ingesta will be found even after a longer period in the jejunum or ileum.

Not every retention after six hours, however, is due to a stricture of the small intestine. Schwarz found that in cases of enteroptosis there are often, after nine or ten hours, still some bismuth shadows in the lowest loops of the ileum. Groedel directed attention to another group of cases that show the same retention in the lower parts of the small intestine, and these, too, where there is no stricture of the intestine, as it is easy to find out by the second standard method of examining the intestine by the aid of the *x*-rays—the contrast enema. It consists of an emulsion of 150 to 200 grammes of sulphate of barium, 300 grammes of bolus alba, and lukewarm water to the total amount of one liter of liquid. Such an enema, injected under a pressure of not more than half a meter of height, will in normal cases fill the whole colon up to the cecum. But there are cases in which this contrast enema, as the *x*-ray plate will demonstrate, penetrates through the ileocecal valve into the lower loops of the ileum. This symptom of insufficiency of the valve is, as Groedel has shown, often connected with a retention of the contrast meal in the ileum, and he supposes that this is caused by the flowing back of the cecal contents into the ileum during digestion. As he observed this insufficiency of the valve in cases of chronic appendicitis, he suggested a causal connection between the appendicitis and the dehiscence of the valve, and he believes that the inflammatory swelling of the cecal mucosa and the adhesions occurring in most of the cases call forth the insufficiency of the valve. The pains of which his patients complained are to his idea caused by the irritation of the small intestine through their abnormal contents.

Dietlen was the first who denied that this insufficiency of the valve was a typical pathological symptom; he found it, it is

true, in a certain number of cases associated with chronic appendicitis, but also in other cases in which there was no affection of the appendix, but other pathological changes in some other part of the colon or its neighborhood. He observed this insufficiency of the valve in cases of spastic obstipation, of obstipation of the so-called ascendens type, pericolitis, and pericholecystitic adhesions, and even in a case of hydrops of the gall-bladder and of spondylitic abscess. Lohfeldt, too, who observed the symptoms in two cases of perityphlitis, does not consider it as a sign of any diagnostic value.

Marcuse records a number of cases of his own knowledge in which he observed insufficiency of the ileocecal valve. He believes that a swollen valve ought to shut easier and earlier than the normal one, and supposes that the sharp angulations at the hepatic and splenic flexures may at certain moments form an obstruction to the passage of the feces and produce a dilatation of the different loops, and in that way the insufficiency of the valve.

Of course, it would be very easy to maintain that in all those cases there were chronic perityphlitic inflammations, not to be discovered by the clinical examination. It is true we often find in a patient on whom we operate in what we believe is his first attack of appendicitis very grievous alterations due to former inflammations, that certainly occurred without any manifestation. Further investigation is therefore indicated. It is particularly important that whenever a patient is operated upon, who had shown evidences of insufficiency of the ileocecal valve, the region of the cecum should be examined and the presence or absence of adhesions be determined. There is no doubt that even a very slight cause may bring about the insufficiency. Schwarz has observed that a superficial massage may overcome the resistance of the valve and produce the reflux of the contents of the colon in the small intestine. Singer and Holzknecht observed the insufficiency of the valve in cases of spasm of the colon, and they suppose that it is due to the increase of intestinal pressure during the spasm, a mechanism similar to that which Marcuse assumed for some of his cases. The most serious causes and the slightest changes may thus make the valve insufficient. Katsch even observed the symptom in healthy persons, who did not suffer from abdominal troubles at all, and a similar observation is related by Dietlen.

We therefore have no right to argue that the insufficiency of the ileocecal valve is a sign of perityphlitis, as Groedel supposed. The author does not even agree with Lohfeldt that pains during the administration of the contrast enema occurring in patients with this symptom are a sure sign of adhesions due to appendicitis. He thinks that Dietlen's and his cases demonstrate with perfect evidence that the most varied pathological alterations in the whole colon and even in the neighboring tissues may under certain circumstances produce the insufficiency of the valve. And if it is proven that even perfectly healthy people may show the same symptoms, the writer thinks he has made clear that the insufficiency of the cecal valve is a symptom that cannot claim any pathognomonic value—one that we may register as a curiosity, but that does not permit any diagnostic conclusions.

RECENT ADVANCES AND INVESTIGATIONS IN SYPHILIS, WITH SPECIAL REFERENCE TO SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.

FREEMAN (*St. Paul Medical Journal*, May, 1914) notes that a negative Wassermann should not be considered conclusive of the absence of syphilis. A period of two years following thorough treatment without clinical signs and a negative Wassermann may be considered as a probable cure. The luetin reaction of Noguchi is of service in latent syphilis, and it is here that the percentage of Wassermann reaction is low. The only positive sign of a cure is reinfection. The combination of mercury and salvarsan seems to be the most beneficial method of treatment and one which is advocated by the majority of experienced men. It cannot yet be shown

that it has changed the ultimate diagnosis of the disease. As to general paresis and tabes dorsalis, Noguchi has shown that it is due to the presence of the treponema pallida in the gray matter and not in the white. In some microscopical sections they were found grouped, and in others widely disseminated throughout the nerve tissue; they were also found in perineural spaces along the course of the axis cylinder. Their presence in nerve cells causes more or less degeneration of the cell, such as swelling, change in form and absence of nucleus, etc. They are seldom found in the region of blood-vessels, and never in blood-vessel walls.

The fact that arsenic is not found in cerebrospinal fluid, following an injection of salvarsan, further substantiates the theory that our remedies do not come in contact with all nerve tissue. According to our present knowledge this must depend on the function of the choroid plexus, as it is here that the cerebrospinal fluid is secreted, and it possesses the power of excluding practically all substances contained in the blood so that in healthy individuals (according to Ellis) only substances with very small molecules can pass through. Urotropin, sugars, sodium chloride, and nitrites are almost the only substances known to normally get into spinal fluid. Fluids injected into the spinal subarachnoid find their way much more readily into the general circulation, however.

The fact that arsenic cannot be found in cerebrospinal fluid following an injection of salvarsan has led several investigators to treating involvement of the central nervous system by intraspinal injections of various spirochætacides. The injection of salvarsan or neosalvarsan directly into the spinal subarachnoid has been done, but with unfavorable results on account of severe irritation and reaction. Intraspinal injections of mercury have proved to be only of temporary benefit, and they also cause severe reactions. The fact that serum from a syphilitic patient previously injected with salvarsan has a decided curative effect on congenital and secondary syphilis, and serum which has not been salvarsanized does not possess such active qualities, led Swift and Ellis, of the Rockefeller Institute, to a series of investigations along the following lines:

A patient suffering from syphilis of the central nervous system is given an injection of salvarsan. One hour later 40 Cc. of blood is withdrawn into sterile centrifuge tubes, and after clotting has taken place it is centrifuged. The following day 12 Cc. of serum is pipetted off and mixed with 18 Cc. of physiologic saline solution. This is heated to 56° C. for one-half hour. Now spinal puncture is made, and fluid is withdrawn until pressure has been reduced to 30 mm., or approximately the same amount of fluid withdrawn as is to be injected. A graduated syringe or tube is prepared with a capacity of 30 Cc. having a rubber tube attached 40 centimeters long, on the distal end of which is a metal plug that will fit the butt of the puncture needle. The tube is filled to 30 Cc. mark with serum (diluted), and after the air is gotten out the tube is attached to the needle and the serum allowed to run into the subarachnoid space by means of gravity. It is often necessary in order to inject the last few cubic centimeters of serum to insert the piston, in case the syringe is used, and to very gently force in the remaining fluid. Only very little force should be used, thereby avoiding any sudden increase in spinal pressure. Painful sensations in legs and sometimes slight rise in temperature often follow injections. They report decided improvement in cases treated both clinically and serologically.

The Wassermann reaction was changed from positive to negative in both blood and spinal fluid; the lymphocyte count was reduced to normal, and the globulin test was changed from positive to negative; the last three tests being very important in diagnosis of syphilis of the central nervous system. To obtain a "cure" in the cases in which nerve tissue has already been destroyed is absolutely out of the question, as a nerve cell once destroyed is never

regenerated; our only hope then can be to retard progress and keep the disease at a standstill by removing the cause.

In a recent article of some length Browning and Lintz, of Brooklyn, state that the spinal subarachnoid sac is a blind pocket and has no absorbents, consequently it retains whatever material accumulates in it; only when the person is in a recumbent position may some of the fluid work back into the cranial subarachnoid and get into the general circulation, and that even this would not affect the more condensed part in the lower portion of the sac. Biologically, as shown by the Wassermann reaction and other tests, the spinal fluid in general paresis and tabes dorsalis carries abnormal constituents, and as antibodies and antigens (used in the sense of immune and immunity-producing bodies) are known to exist in solution in a colloidal state they cannot diffuse through any retaining membrane; therefore those in the spinal subarachnoid sac cannot reach injurious organisms or toxins near or far. The authors conclude that the proper method of procedure is to take these from their place of inactivity and introduce them into the general circulation, where they may act. They make a spinal puncture and reinject fluid subcutaneously or intramuscularly according to amount, using from 6 to 60 Cc. every ten days to two weeks, and report very favorable results; and they advise deferring injection until all reaction from spinal puncture has subsided—never less than two days.

Nonne, in his recent book, reports a case of Scholes' of undoubted paresis that apparently recovered following an attack of double lobar pneumonia associated with otitis media. The literature contains numerous citations of improvement in paresis and tabes following fevers. These cases are interesting from the view-point of the effect of high temperature in syphilis of the central nervous system and have been a source of other investigations, namely, the use of sodium nucleinate to artifically produce fever. A neurologist in St. Paul recently treated a patient with paresis by injecting intramuscularly 30 Cc. of a 2½-per-cent solution of sodium nucleinate into the buttocks. A very extensive abscess developed at the injection point, and the patient had a temperature of 102° to 103° for two weeks. Previous to this time he had received no antisyphilitic treatment except a few inunctions while in the hospital. The recovery was marked and the patient resumed his occupation. Naturally the duration of remission is problematical, but nevertheless interesting. Leucocytosis must be a determining factor in this class of cases.

Recent researches, if they have done nothing else, have placed general paresis and tabes dorsalis in the syphilitic column. The old saying, "No syphilis, no paresis or tabes," is admitted by more neurologists and syphilographers than ever. The evidence, circumstantial though it may be in some cases, is sufficient for the following reasons:

Frequent history and evidence of syphilis in these cases.

Discovery of treponema pallida in brain and cord in paresis and tabes.

The absence of primary and secondary lesions of syphilis in paretics and tabetics.

In the juvenile forms the sexes are equally affected and signs of hereditary syphilis are frequently present. Here sexual excess and alcohol can be excluded.

Frequent positive Wassermann reactions in blood and spinal fluid.

Last and most important is Kraft-Ebing's inoculation of nine paretics with no signs or history of syphilis without a single reinfection.

EXCLUSION AS PRACTICED BY BIONDI.

PORTA (*Journal de Chirurgie,* tome xii, No. 3, 1914) notes that we must all admit that for benign lesions of the stomach and duodenum simple gastroenterostomy is not a radical cure. It does not always relieve the pain, vomiting, nor gastric stasis. It is

not necessarily preventive of the extension or recurrence of an ulcer, and at times is dangerous because of the vicious circle established thereby, and particularly because of peptic ulcers which may develop. When combined with exclusion of the pylorus it offers a method of intervention less grave than radical removal and one which assures the function of a new pylorus. This method eliminates gastric stasis by suppressing hypersecretion and hyperacidity. It acts directly upon the causes of the duodenal and gastric lesions by placing them in a condition of absolute repose.

Gastroenterostomy is the method of choice in cases of pronounced cicatricial pyloric narrowing in which there is an active lesion or its adherence makes radical procedure impossible, and finally in case the patient's condition is such as to justify only rapid and non-vulnerating surgery. Resection, always a tedious and serious operation, is much more formidable in the presence of extensive adhesions. Indications for pyloric exclusion are in general for all ulcers of the duodenum, chronic pyloric and juxtapyloric ulcers in which resection is not possible, for adhesive perigastritis, fixing the pylorus and the pancreas, for Reichmann's disease accompanied by gastric stasis or ulcers, for duodenal or pyloric tuberculosis, for vertical or U-shaped gastroptosis with stasis, and in all cases of gastric lesions treated unsuccessfully by simple gastroenterostomy. Exclusion possesses all the attributes of a major operation without any of its special dangers.

Biondi practices exclusion by making a 6 to 10 cm. incision parallel to the axis of the stomach running from the pyloric antrum well along the duodenum. This incision cuts the serous, muscular, and submucous coats, leaving intact the mucosa. The latter is dissected through its entire circumference, lifted up, ligated, and excised for a distance of 4 to 8 cm. The gastropyloric incision freed of its mucosa is then inverted by three lines of suture. The effects of the operation are that the large gastroepiploic vessels are not involved, nor is the lesser omentum opened. Moreover, the procedure is easy, guarantees asepsis, and is conducted in a region entirely accessible.

GASTROENTEROSTOMY: EXPERIMENTAL AND CLINICAL.

SCRIMGER, ARCHIBALD, and PIRIE (*Canadian Medical Association Journal,* April, 1914) hold as the result of a laboratory and clinical study of this subject that the anastomosis in the cardiac portion, with the pylorus open, will, as has been observed by others, allow most of the food to go by the pylorus. It will afford no protection to an ulcer in that situation. More than this, in dogs at least, most of the food leaving by the pylorus reënters the stomach through the anastomosis, and the animals will not do well; they vomit and grow thin.

That the addition of the exclusion of the pylorus will protect an ulcer, but will not greatly improve things otherwise. The stomach will fail to empty. The animals will vomit and grow thin.

That the placing of the stoma in the pyloric portion improves matters enormously. Here food will pass out by the stoma chiefly, though partly also by the pylorus if open. If an ulcer is present, it can be efficiently protected by excluding the pylorus. In both cases the animals do well.

That if an ulcer is found proximal to the pylorus anywhere in the pyloric portion, it can still be protected by laying a fascial ligature around the stomach between it and the anastomosis; further, that in animals at least an anastomosis placed in relatively the same position as that necessarily used in the human, if a short-loop operation is done, is much more efficient when the fascial ligature is applied immediately distal to the stoma than when placed at the pylorus.

What is the reason for the inefficiency of the stoma placed in the cardiac portion and its efficiency when in the pyloric portion? The answer, they think, is to be found in the observations of intragastric pressure made by v. Pfungen, Kelling, Cannon, and others. They proved the pressure in the cardiac portion during digestion was low, but strikingly constant, variously esti-

mated at from 6 to 16 cm. of water, while in the pyloric portion it is intermittently high, estimated at from 60 to 120 cm. of water, during active peristalsis.

The cardiac portion is practically without peristaltic activity; its function is to maintain by tonic contractions a constant low pressure. The pyloric portion is strongly peristaltic; its muscle rhythmically develops relatively great power. The low pressure in the cardiac portion is insufficient to force food out of the stoma so long at least as there is an easier path into the pyloric antrum. The high pressure in the pyloric end will force the food rapidly through any opening that is available.

THE THERAPEUTIC VALUE OF THE X-RAY AND THE RADIOACTIVE SUBSTANCES IN CARCINOMA OF THE UTERUS AS DETERMINED BY PATHOLOGICAL EXAMINATION.

RUBIN *(American Journal of Obstetrics and Diseases of Women and Children,* June, 1914) observes that the therapeutic use of the *x*-ray for deep-lying tumors has now been controlled by a sufficient number of observers to make this treatment acceptable as a powerful remedy in gynecology. We need no further evidence to believe that the hemorrhages of the climacteric period and the metrorrhagias of individuals in the third and fourth decade of life can be considerably controlled, often entirely cured, by means of the hard *x*-ray. Von Gräff has also had satisfactory results in the hemorrhages occurring at the onset of the menses. Reports in literature have without exception been favorable concerning *x*-ray therapy of these functional disturbances. The action of the ray appears to be primarily upon the ovaries.

It has been further positively demonstrated by Gauss and Lembcke, Reifferscheid, Von Gräff, and others that not only do the hemorrhages caused by fibromyomata of the uterus lessen or cease altogether, but that the tumors often diminish greatly in size and even disappear. Besides, the intensive many-field *x*-ray application made possible by the use of the 3-millimeter aluminum filter and the continuous water-cooled *x*-ray tube, can bring about very decided changes in carcinomata of the uterus or even of the ovaries and other deep-seated organs, resulting in a number of cases in an apparent cure.

At the recent International Medical Congress in London the astonishingly brilliant reports of the Freiburg Clinic on the treatment of fibromyomata with the *x*-ray, the substantiation of these reports by Bumm and Döderlein, who at the later Congress at Halle also reported similarly promising results in carcinoma of the uterus with radium and mesothorium, opened at once new and unlimited possibilities of lessening cancer mortality. Wertheim himself observes in a publication that he reconsidered publishing a report of his latest results of his radical cancer extirpation in the presence of the remarkable cures claimed at the Halle Congress for radioactive substance, including the *x*-ray. It seemed at that time as if surgery was to be completely replaced by the newer deep penetration ray-therapy.

The *x*-ray generated in the Röentgen tube and the gamma ray of the radioactive substances as radium and mesotherium have since then entered into competition with the surgical treatment of myomata and carcinomata, and we must weigh, before accepting or renouncing either form of therapy, the advantages of the one against the disadvantages of the other. The results with the Wertheim operation had been 50 per cent of permanent cures of all operated patients. The time in which the *x*-ray, radium, and mesothorium were used has been altogether too short for practical comparisons. Döderlein used mesothorium in 152 cases of uterine and vaginal cancer, most of which were of the inoperable variety. One-third of these were treated also with the *x*-ray. In all cases he observed some beneficial effect, even if it was only to still pain and to cause cessation

of hemorrhages. Thirty-one cases remained both subjectively and objectively free from the manifestations of cancer. Several cases reported by Döderlein and Von Seuffert are striking illustrations of the remarkable effect of mesothorium on cancerous lesions which clinically would be regarded as hopelessly inoperable.

That mesothorium does induce in cancer cells certain, as yet unknown, physicochemical reactions which result in their destruction can no longer be doubted. Clinically large cauliflower growths have been known to disappear in a tolerably short time after treatment, and sometimes with astonishing rapidity. The fixed uterus rendered immovable by firm adhesions and cancerous infiltration of the pelvic connective tissues becomes under treatment movable and apparently assumes the consistency of the unaffected organ. Smaller localized surface epitheliomata of the vaginal portion of the cervix also disappear within a short space of time, to be replaced by smooth, apparently healthy mucosa or smooth granulation tissue. The same effect is obtained by the use of radium. Warnekros claims that the deep *x*-ray application will accomplish the same result.

Without entering into the merits of the deep *x*-ray therapy as compared to the quicker results of surgical treatment, it is obvious that for the strictly scientific control of its ultimate value it has become imperative to examine *in toto* uteri which have been subjected to the deep ray-therapy for the purpose of ascertaining the actual extent of the cancerous growth in the uterus, and the amount and character of cell destruction induced by the radioactive energy. In this way it will be possible to arrive at some definite conclusion with regard to the actual depth and efficacy of the irradiation. The clinical examination as to the reduction in size of the tumor or of the improved mobility of the organ is alone not sufficient to determine the true effect of the treatment. The cancer cell nests may have invaded the deeper parts of the organ, they may even be scattered into the lymphatics, and not being grouped into nodular masses readily escape detection by the palpating fingers. These undestroyed cells can theoretically continue to propagate a new larger growth and even lead to metastasis.

Wertheim, among others, made systematic control histological examinations of the cancerous growth before treatment, and then of the entire uterus and its adnexa removed by the radical operation. He was thus enabled to study both the actual amount of cancer cell destruction and the amount of cancer growth which resisted the ray effect and remained perfectly viable.

The depth to which the ray penetrates as evidenced by the morphological changes in the cells has not, as yet, been established. This still awaits further study. At present there has not been demonstrated a single uterus primarily the seat of a well-marked cancer which has become entirely free of the malignant growth. Possibly such an effect will be successfully demonstrated in the near future. A very important desideratum is the prevention of the deleterious tissue destruction caused by the A- and B-ray emanating from radium and mesothorium and also by the secondary rays generated in the filter. The problem of devising suitable filters has been partially solved by the use of such metallic alloys as brass and bronze. These are further reënforced by rubber sheaths and cotton or gauze packings so as to separate the radium or mesothorium capsules for a distance sufficient to prevent the burning of neighboring normal structures.

It is, however, not enough to achieve a complete cure in small surface epitheliomata. These lesions can be removed more promptly by the simple curettage, or the cervix amputation. Further research as carried out at the Wertheim Klinik, where the gynecologist and the gynecological pathologist both check up the results, will establish the ultimate therapeutic value of radium, mesothorium, and of the *x*-ray in carcinoma of the uterus. At present we can accept these measures as of value in

postoperative therapy. The further development of the *x*-ray may render it possible to destroy metastasis in the regional glands and in remote areas. Warnekros has demonstrated the same action on cancer of the vaginal portion of the cervix by the application of the anticathode over the symphysis without vaginal application. There is great hope that the *x*-ray will supersede radium and mesothorium not only because it is under the present circumstances more available, but chiefly because the secondary bad effects may be avoided. In any event surgeons will continue to operate on carcinoma of the uterus and depend on the deeper radiotherapy to combat such *rests* of cancer which cannot be removed at operation without reducing the patient's chances for immediate postoperative recovery.

TRAUMATIC FAT EMBOLUS.

TANTON (*Journal de Chirurgie,* tome xii, No. 3, 1914) after a brief review of the literature of this subject notes that fat embolus is three times more frequent in men than in women, mainly because the former are more frequently injured. Usually it is unperceived, is rarely fatal, and is especially observed in adults between the twentieth and fiftieth years. It is rarely observed in children or old people, and is usually due to traumatism of the medullary portion of the bone. Fracture is the commonest cause, usually fracture of the long bones, because they present the ideal conditions, which are, according to Fluornoy, the abundance of liquid fat in the medullary substance of the bone, the prolonged gaping of large vessels of the marrow, the push of arterial tension, and pulmonary aspiration. Fluornoy states that there is abundance of fat in the circulation after all fractures. Even simple contusion may, however, cause this complication. Orthopedic intervention has often been responsible for the condition and has always been practiced upon the lower extremity, usually the knee.

Payr noted in five fatal cases of fat embolus in young people between ten and fifteen years old, and in a man thirty-eight years old, persistence of the thymus and a generalized ganglionic hypertrophy, and therefore holds that the lymphatic diathesis is an important factor.

De Quervain out of 45 cases of fat embolus observed the lymphatic diathesis in only five. The first effect of the fat is to produce subpleural and intra-alveolar hemorrhages and pulmonary infarcts, accompanied as a rule by pulmonary edema, due, according to Virchow, to hyperemia of the lobules, the vessels of which are not obstructed. Usually other viscera are also involved. Embolism of the cardiac capillaries, fatty degeneration of the muscle, and acute dilatation of the right heart, which is filled with a mixture of blood and fat, have been observed. Because of the large size of the pulmonary capillaries the fat may pass through and reach the whole system, especially the kidney, liver, spleen, and brain, the mucosa of the stomach, and the vessels of the skin. Most of the fat is eliminated through the kidneys; lipuria appears from the second to the fourth day, and according to Scriba is constant. Moreover, it appears intermittently in the urine for five to ten days after the injury. Usually it takes three to five weeks for the system to free itself entirely from its appearance.

The symptomatology varies in accordance with the severity of the attack. Lipuria is as a rule the only symptom, but it is a constant one. There is formed on the surface of the urine a whitish nebulous coating of fat, showing under the microscope the typical brown globules and staining with osmic acid. If the quantity of fat thrown into the general circulation is large, respiratory, cardiac and cerebral troubles develop, with the predominance of one or the other in accordance with location of the fat.

Payr distinguishes two forms—the first cerebral, the second pulmonary. The first is more serious than the second. The cerebral form usually develops twenty hours

or more after the accident. The patient becomes apathetic, somnolent, and comatose, dying without regaining consciousness and without any localizing symptom. Under other circumstances following a period of stupor spasms develop, or contractures or vertigo; vomiting or paralysis, with relaxation of the sphincters. The respirations become of the Cheyne-Stokes type.

In the pulmonary form the symptoms develop earlier—indeed, within a few hours of the accident. The patient suffers from dyspnea, sometimes slight, sometimes severe, accompanied by a sense of oppression and cough. There is a bloody, frothy expectoration, usually an extended area of dulness on percussion, tumultuous heart action, irregular respiration, often of the Cheyne-Stokes type, pronounced cyanosis, fall of blood-pressure, and death.

Early diagnosis is based on four symptoms—dyspnea, elevation of temperature and pulse, cerebral trouble, and lipuria; later a convincing sign often is lacking.

Roux holds that a discordance between the pulse, often slow, and respiration accelerated, indicates fat embolus.

Benestad has noted that two to four days after the accident when associated with the phenomena of dyspnea little cutaneous petechiæ may develop on the chest, lateral sides of the chest, the neck, the belly, the anterior surface of the thighs.

Fluornoy notes that of 104 cases which he has collected, 18 died. Of Scriba's 86 eight died. Of Gröndahl's 69 cases one died. Even with pronounced dyspnea and plenty of expectoration recovery may take place. He observed the symptoms developing with the intensity and shocking rapidity of blood embolus. Lexer notes that one case died in a few minutes in consequence of the breaking up of an ankylosis under an anesthetic. Usually death occurs in a few hours.

As to treatment, little is to be done in so far as the emboli themselves are concerned. Prophylaxis, however, should be very carefully considered. Thus a radiographic examination should be had before an ankylosed joint is broken up. If there exist a considerable osseous atrophy other conservative treatment should be adopted. Great gentleness should be used in handling or breaking up or cutting. The simultaneous operation upon several joints should always be avoided. A part of the prophylaxis lies in immobilization of fractures. If the case is seen in its early stage it is perfectly justifiable to cut down to the seat of fracture and evacuate fat and blood. The methods of dissolving the fat in the blood by the injection of soda or of ether are not to be commended. The medicines indicated are tonic, cardiac, and diuretic.

SUMMING UP THE GOITRE QUESTION.

MAYO (*Surgery, Gynecology and Obstetrics,* March, 1914) thus lucidly sums up this question:

Concerning the development of the thyroid, embryologists have returned to their former belief that the gland is developed from a single instead of three anlage. It originates between the three portions of the developing tongue and early descends to its final resting-place upon the trachea. The tubular line of descent is known as the thyroglossal duct and early undergoes obliteration. The remains of this structure often persist at the posterior portion of the tongue, the foramen cecum. Gaskell has shown, however, that in the higher invertebrates the duct persists as such and in great part delivers into the genital tract, the analogue of the thyroid thus being evidently a sex gland. Occasionally the gland remains in the tongue as a lingual thyroid; again, portions are separated in descent as aberrant thyroids, or partially attached as accessory thyroids, while the midline cysts are usually due to the persistence of pharyngeal embryonic mucosa carried down in the thyroglossal duct by the descending gland.

The gland, horseshoe in shape and consisting of two lobes connected by an isthmus, rests astride the trachea, to which it is quite firmly attached by its capsule. No other organ in the human body is so well provided with a blood supply. In pro-

portion to its weight it receives 28 times as much blood as the head, and all the blood in the body passes through it, as it does through the brain, once every hour. It has been shown to be five and a half times more vascular than the kidney. While the lymphatics are numerous, those leaving the gland are small as compared with its wonderful blood supply, apparent activity, and production of secretion. It is probable, however, that this secretion is delivered into the veins by short lymph spaces throughout the gland itself. Baumann showed long ago that there was a high iodine content in the human thyroid. There is much less in herbivorous animals.

The secretion of the thyroid is thin, watery, and non-stainable, and it is probable that the active cells represented by one-sixth of the gland are sufficient to furnish the necessary amount of secretion for the preservation of good health.

The gland in the higher invertebrates is apparently a sex organ. To some extent this relationship holds through vertebrates, including man. At the period of puberty some increase in the size of the gland is quite common. This is often noted during menstruation, and especially during pregnancy; while at the menopause many of the symptoms are apparently those of alternate hyper- and hypoactivity of the thyroid, as shown by its effect upon the nervous and circulatory systems and nutrition. While it is probably as active in the control of early growth, both mental and physical, as is the thymus, a child born without a thyroid fails to develop mentally or physically; and its loss in the adult usually leads to a peculiar deterioration known as myxedema.

The variations in the gland without symptoms are so great that it is almost impossible to state what is normal thyroid. Undoubtedly the gland has a considerable storage function, and when this is carried to excess it leads to local areas of stasis due to pressure atrophy of the producing cells. Such glands constitute many of the atoxic (simple) goitres, though here also are included some of the encapsulated adenomata of both adult and fetal type. Colloid, then, may not be an essential secretion, but a spongy-holding material thrown out by the gland in exerting its storage function.

In exophthalmic goitre—so-called hyperthyroidism—there is always a true hypertrophy and hyperplasia, an increase in the cells and activity of the gland. Atoxic (simple) goitre includes about all varieties not inflammatory, exophthalmic, or malignant, yet in this group have been included a large number of cases of toxic thyroid due to degeneration of the gland and presenting many of the symptoms of exophthalmic goitre, particularly those of the cardiovascular systems, but always without protruding eyes. These cases, in Europe, are frequently classed as pseudo-exophthalmic goitre.

In simple goitre there is the enlargement of the thyroid, which may follow its normal contour or occur in the isthmus or either lobe and present the colloid type. It may also be an encapsulated adenoma representing a rounded tumor of the whole gland or any portion of it. The sudden appearance of a tumor of the thyroid with symptoms of pressure may come from internal hemorrhage or from active hyperemia, while infections with severe, acute symptoms of toxemia are but rarely seen.

Substernal goitre is noted in about one in forty cases of simple goitre; slight substernal projections occur much more frequently. They are diagnosed by symptoms of respiratory pressure, prominent veins extending from the neck down onto the chest, by percussion, and by the roentgenogram. The very large ones are fortunately of the encapsulated adenoma type, admitting of enucleation.

Simple goitres are subject to changes of the cystic type, especially the encapsulated adenomata, while fibrous and calcareous degenerations are seen, and some cases present all varieties.

Exophthalmic goitre presents a fairly sharp clinical picture. Its onset, as a rule, is relatively acute and the course of the disease fairly definite. Early in the history the clinical picture is that of a toxin acting directly on the more vital organs, more

notably the central nervous and vascular systems. Later it is made more complex by the interaction of those organs whose functions have been directly disturbed by the toxin. The order of onset of the more important symptoms based on the average of our series is as follows: (1) cerebral stimulation, (2) vasomotor disturbances of the skin, (3) tremor, (4) mental irritability, (5) tachycardia, (6) loss of weight, (7) cardiac insufficiency, (8) exophthalmos, (9) diarrhea, (10) vomiting, (11) mental depression, (12) jaundice, and (13) death. In some cases certain of the symptoms may not be present in the early stages of the disease, which makes the condition difficult to diagnose. There are certain conditions of the nervous system of unknown origin, which much resemble this disease. As a rule, however, these patients have symptoms extending over many months. They have neither exophthalmos nor an increase in the size or density, and are not benefited by operation on the gland.

In carcinoma and sarcoma of the thyroid the picture is usually one of rapid growth of the gland, which becomes hard and irregular, often with neighboring glandular involvement. These symptoms may also occur in a simple goitre of long standing, however. Because of lymphatic and venous delivery with the early capillary involvement, early metastases in glands and lungs are common and local recurrence is the rule. In such cases, when the disease is confined within the capsule, treatment requires removal of the entire gland.

Because of their interrelationship in function and location, the parathyroids and the thymus are considered in relation to the diseases and especially to the surgery of the thyroid. The parathyroids are usually four in number, a superior pair and an inferior pair. They are situated on each side and behind the thyroid, but intimately connected with its capsule. Much is attributed to the action of these little bodies in maintaining the equilibrium of the mineral salts of the body, especially of the calcium. Experimental evidence shows that, when removed from animals, a condition of muscular spasm known as tetany develops, following a rapid loss of the mineral salts. The blood supply consists of terminal branches from the vascular anastomosis between the inferior and superior thyroid arteries. Their veins have no valves. Thus they frequently become injured by hemorrhage during the congestion occurring at birth, to which is attributed infantile tetany and also tetanic attacks of later childhood and even of adult life. Tetany following operation is apparently associated with a great loss of thyroid tissue. In such cases the best treatment is the feeding of fresh beef parathyroids, and, following MacCallum's plan, the restoration of calcium to the body, preferably through the administration of calcium lactate in 5-per-cent solution, at repeated intervals. In addition to this the feeding of thyroid is indicated, and some cases are reported as benefited by the parathyroid serum.

The thymus is believed by some physiologists to be a gland of marked interrelationship with the thyroid in the growth of the body, and in the hyperplasia of the thyroid the thymus is usually found enlarged. While this is true of the majority of cases, it by no means holds good in many of the most serious cases, as shown at autopsy following both medical and surgical deaths of these individuals.

The thyroid consists of a great number of groups of cells which may be found even in the adult in various stages of development, from unarranged, embryonic cells, Wolfler's rests, to well-developed follicles lined with epithelium, secreting into a well-marked central cavity. The simplest change is hyperemia, which may be temporary, occurring through the nervous system or more prolonged through systemic infection. It may be sufficient, however, to produce hemorrhage within the gland.

Acute inflammation of the thyroid may occur as the result of traumatism or gen-

eral bacterial disease. Progressive hyperplasia consists in an increase in the number of parenchymatous cells, usually of a hypertrophic type, either in single or multiple layers. This may occur in parts of the gland or throughout all of it. True adenomata of the thyroid can be identified only when encapsulated. Histologically they are either fetal adenomata, the parenchyma of the true fetal type, or adult adenomata in which the parenchyma has taken on adult characteristics—*i.e.*, follicles lined with cells of adult type and subject to all the changes which are noted in the thyroid outside of encapsulated tumors, that is, the various degenerations.

Of the retrogressive changes, retention of secretion is the more common, the simpler, and the more nearly normal physiologic state, as the thyroid is not only an actively secreting organ, but normally has a storage function. Colloid appears to be the basis for the preservation of this secretion. When it occurs in excess, the condition is pathologic and leads to degeneration or atrophy of cells.

Atrophy of the thyroid results from overwork, pressure, and lack of nutrition to the gland. Simple goitre may undergo such a degeneration from these causes and in the production of toxic materials so affect the circulatory and nervous systems that the condition resembles the more severe toxic state of exophthalmic goitre, or in fact any chronic toxemia.

To a variable degree thyroid enlargement may be due to demands made upon its secretion by certain systemic conditions, such as sexual development at puberty, the goitre of adolescence, the enlargement or hyperemia at menstruation, enlargement in the latter part of pregnancy, the changes at the menopause, and last, but not least, the possible iodine demand occasioned by bacterial infection of various organs.

Accumulated evidence shows that endemic goitre frequently comes from a water-borne irritant. In such cases ensuing chronic intestinal toxemia may occasion the extra demand on the thyroid. McCarrison in his investigations of the subject in India has done much to prove this.

The various types of goitre should be treated both medically and surgically. Many goitres of the simple and mild exophthalmic type undoubtedly are cured spontaneously, although various forms of medical treatment may hasten the recovery and restoration of the gland to an apparently normal condition in many instances, especially in the early stages of simple goitre.

Simple colloid goitre which has resisted treatment and encapsulated adenomata are in most instances best treated by removal of the diseased portion of the gland with preservation of its better portions. If the diseased part is not removed, such glands will later in life expose the individual to a serious menace, since the degeneration which follows in an average time of about fourteen years may be of such a character as to permanently damage the heart, kidneys, and liver. During middle life such degeneration frequently follows the ill-advised use of iodine; the severity of the toxic process places these patients on a par with the severe types of exophthalmic goitre. Plummer has shown a great similarity in the damage to the essential organs of the body, such as the heart, kidney, and liver, by various forms of toxemia. In exophthalmic goitre, however, the essential condition identifying it from other toxemias is the parenchymatous increase of the thyroid. Exophthalmos occurs in no other systemic condition. The staring eye (Stellwag) and the widening of the palpebral fissure (Dalrymple) may occur with other toxic myocardial lesions, especially that of Bright's disease. Exophthalmic goitre is essentially a disease of a chronic character, presenting exacerbations and ameliorations of symptoms extending over a period of months or several years. After the first year the gland often undergoes a regression.

While this disease is amenable to surgical treatment by the removal of a large

amount of the hypersecreting gland, it is by no means emergent surgery, and all patients, during periods of exacerbation, should be considered as medical cases. Surgery is indicated in the up-wave of improvement. The majority of these patients can withstand thyroidectomy at the time they are seen by the surgeon. Extreme conditions, especially dilatation of the heart, may require medical preparation, and the operative interference following in cases resistant to treatment should be confined to injections of boiling water into the gland after Porter's plan to hasten improvement. In most of the severe cases a ligation is made, first, of the left upper pole only. Should the reaction following this be severe, the ligation of the right upper pole is indicated a week later, and thyroidectomy reserved until four months have elapsed, by which time these patients have made an average gain of 22 pounds, with great general improvement. However, if the reaction following the left ligation is not unduly severe, a partial thyroidectomy may be made at the second operation the week following.

In operating, the best exposure of the thyroid is obtained by a curved transverse incision through skin and platysma, extending between the anterior jugular veins with wide separation of the flaps, midline vertical division of the muscles exposing the thyroid. If division of the muscle be necessary, it should be made at the upper part of the dissection to break the line of scar and preserve muscle-formation. In some cases the wound may be closed without drainage, the cavity being filled with salt solution. As a rule, however, patients having tubular drainage for twenty-four hours are more comfortable. A subcuticular closure of the wound with catgut, approximating first the platysma muscle, secures an almost imperceptible scar.

The anesthetic of choice in most instances is ether. Complicated cases, however, may be best carried through the operation by the local use of 0.5-per-cent novocaine solution with the addition of a little adrenalin. Occasionally the combined use of a local with a general anesthetic is advisable; the local anesthetic relieving the pain, necessitates less of the general anesthetic.

In severe forms of Graves's disease the use of 1/200 grain of scopolamine with 1/6 grain of morphine one hour previous to operation is often a distinct advantage. Some patients seem to have an idiosyncrasy to the drug, and in such cases the operation must be postponed twenty-four hours to permit elimination. In all cases in which ether is used as the general anesthetic 1/200 of a grain of atropine should be given one-half hour before the operation, to maintain a dry trachea and pharynx during the operative procedure.

A SIMPLE CUTANEOUS CUT TO CURE "TRIGGER-FINGER" OR "SNAP-FINGER."

ABBE (*Medical Record*, March 7, 1914) states that most physicians have occasionally encountered a case of trigger-finger and have been puzzled to account for its cause, or to cure it.

The patient grasps a brush, or closes the finger over any medium-sized object, and on releasing it finds the little finger or one of the others refuses to open. The victim uses his other hand to raise the finger, when it suddenly jumps up with a snap and sometimes a little pain.

This has been variously explained by surgeons of many countries as due to a supposed swelling, caused by a congested point somewhere along the flexor tendon, where it catches under a restricting bridge of fascia covering the tendon sheath. This tumefaction has not been well demonstrated or uniformly located at any point. Abbe's first five cases reported assumed this explanation. After studying many subsequent cases he operated at last on the annoying case in the hand of a surgeon.

Abbe operated under cocaine anesthesia by a long incision beginning near the distal

joint of his finger, finding no relief to the repeated snapping tests with the tendon exposed in the open wound until he had cut nearly to the middle of the palm. Then by division of the constricting transverse fibers resting on the tendon sheath the relief was instant, and has endured for years.

Abbe then decided to try a simple subcutaneous cut with a fine knife at this point in the next case presenting itself for his care. He located this bridge exactly under the extreme flexure crease of the palm.

Recently a distinguished artist sought relief from this distressing condition. He had been obliged to paint with his palette on a table, because when holding his brushes in the grasp of his left hand the little finger stuck tight down and only admitted relief with a painful snap. Abbe at once painted the part with iodine, inserted a fine bistoury in the flexure crease, and pressing the point down to the tendon, drew it along for a half-inch. The relief was instantaneous and final. The finger now closed into the palm and played naturally without catching. A small pad of boracic gauze made pressure for two days, and the trouble was cured.

The tendon was easily located by thumb pressure at the crease, and was covered by nerve or vessel. Cutting the tendon fibers lengthwise (if one wished to cut deeply, which is not necessary) would in no wise damage the tendon.

The trouble is explained, not by a rheumatic tumefaction of the tendon, but by a crumpling up of the conjoined flexor tendon, very much as a tape might crinkle, when slack, above a slot and refusing to pull back easily.

PYLOROPLASTY.

FINNEY and FRIDENWALD (*Surgery, Gynecology and Obstetrics,* March, 1914) record the results of thirteen years' experience with this truly admirable operation. It consists in a horseshoe-shaped incision through the pylorus, extending down through the anterior walls of the duodenum and the stomach, after they have been approximated. Adhesions binding the pylorus to neighboring organs should be thoroughly freed, as well as the pyloric end of the stomach and first portion of the duodenum.

The thoroughness with which the pyloric end of the stomach and the upper end of the duodenum are freed determines largely the ease and success of the operation. Much advantage is gained from the so-called mobilization of the duodenum. Kocher has emphasized the great importance of this procedure. A suture to be used as a retractor is taken in the upper wall of the pylorus, which is then retracted upward by means of this suture. A second suture is then placed in the anterior wall of the stomach, and a third in the anterior wall of the duodenum at equidistant points from the suture just described in the pylorus. The second and third sutures are taken as near the opposing free borders of the stomach and duodenum as possible, and mark the lower ends of the gastric and duodenal incisions respectively.

Traction is then made upward on the pyloric suture, and downward in the same plane on the gastric and duodenal sutures. This keeps the stomach and duodenal walls elevated and taut, and allows the placing of the subsequent sutures with greater facility than if they remained retracted and relaxed. The peritoneal surfaces of the duodenum and stomach along its greater curvature are then sutured as far posteriorly as possible. For this row the continuous silk suture is to be preferred.

After the posterior line of sutures has been placed and tied, an anterior row of mattress sutures is taken, which are not tied. These sutures after they have been placed are drawn aside, thus exposing the line of incision.

After all the anterior stitches have been placed and retracted the incision is made in the shape of a horseshoe. The anterior and posterior lines of sutures should be placed far enough apart to give ample room for the incision to be made between them.

Beginning in the gastric wall, the incision is carried upward to and through the pylorus, and around into the duodenum. Hemorrhage is then stopped. Scar tissue or active ulcers present in the gastric or duodenal anterior wall may be excised through this incision.

Those in the posterior wall the authors have been treating of late just as other chronic ulcers—*i.e.*, excising the overhanging edges of mucous membrane, and incising the dense fibrous base, care being exercised to avoid perforation of the posterior wall of the stomach and to stop all hemorrhage by ligature or suture.

The opportunity thus afforded to explore digitally and inspect the ulcerated area and then excise it through this incision is one of the strongest points in favor of the operation.

A continuous catgut suture is now taken through all the coats of the stomach and duodenum on the posterior side of the incision in order to reënforce this line of sutures. The anterior sutures are then straightened out and tied, and the operation thus completed. The mattress sutures may be reënforced with as many Lembert sutures as may be thought best. All the stitches are thus placed and the posterior row tied before the bowel is opened, and it remains open only long enough to control the hemorrhage and excise any ulcer that may be present, thus giving the minimum of exposure of infected surfaces.

The size of the newly formed pylorus may be made as large or as small as desired. Unless the stomach is very much dilated or has descended to an unusual extent, the lower limit of the new pylorus will be found to be at or near the level of its most dependent part.

The authors have studied the records of 100 cases in which pyloroplasty has been performed, covering a period from 1900 to the present time. Of these the immediate results were noted in all cases; the remote results in 78 cases.

Of the total number there are 63 males and 37 females. Pain was the dominant symptom, vomiting coming next in the order of frequency; melena, retention, and hematemesis next. Four cases required secondary operation—one 11 years after the first operation from obstruction due to adhesions produced by cholecystitis; in the second duodenal ulcer formed four years after the pyloroplasty; in the third infected suture at the site of the pyloroplasty; in the fourth duodenal ulcer formed after a year and a half. In all of these cases gastroenterostomies had to be performed, and this gave entire relief. As to the immediate results, 90 per cent were satisfactory. In but five cases did nausea and vomiting to any marked degree follow the operation, There was a marked freedom from discomfort following immediately after the operation. Indeed, the immediate postoperative results are quite comparable to those observed after appendectomy when performed between attacks. Rectal nourishment is given for two days after operation. On the third day egg-albumen may be administered in teaspoonful doses. There were five deaths, none attributable to the operation in itself. During the first year there were 77 satisfactory results and five unsatisfactory ones. Following the first year of the 78 cases kept under observation, 73 gave satisfactory results and five unsatisfactory ones. The authors believe from their observation of 100 cases of pyloroplasty that they are justified in drawing the following conclusions:

The operation has its greatest indication in the relief of pyloric stenosis due to chronic ulcers, situated at or near the pylorus, and on either side of it, or resulting from cicatricial contraction following the healing of such ulcers. It is often a useful procedure in cases of hemorrhage due to gastric ulcers on the lesser curvature, or to duodenal ulcers which cannot be controlled medically, and which threaten the life of the patient, as well as in the chronic dyspepsias due to ulcers which have not been relieved by medical treatment.

The operation has certain advantages over gastroenterostomy and but few of its disadvantages.

Such objections as are urged against the operation—*e.g.*, its inapplicability in the presence of adhesions surrounding the pylorus, as well as in the presence of active and bleeding ulcers, and also because of the fact that the new opening is not at its lowest point, taking advantage of gravity—are according to the authors' experience more fanciful than real, since the operation has frequently been performed under these conditions with most gratifying results. The interesting experimental work of Cannon and Blake and others supports this contention.

The only contraindications to the operation are inability to mobilize the duodenum when adhesions are too dense, and thickening and infiltration about the pylorus due to hypertrophic forms of ulceration. These conditions, however, occur but rarely.

In atony or gastroptosis with slight motor insufficiency such as is observed in the water-trap stomach, or in nervous dyspepsia—*i.e.*, in gastric disturbances not dependent upon organic disease—this operation is contraindicated.

The special advantages of this operative procedure lie in its affording the opportunity to excise all ulcers in the anterior walls of the stomach or duodenum after direct inspection of the part affected; also the application of treatment to ulcers situated in the posterior walls. It does not greatly disturb the normal relation between the stomach and intestines as is the case in other operations.

The immediate as well as the final results are most encouraging. While in some instances partial gastrectomy or gastroenterostomy is undoubtedly the operation of choice, nevertheless, on account of its simplicity and because of its satisfactory end results, pyloroplasty will continue to retain its position as a safe and useful procedure.

REVIEWS.

MODERN MEDICINE: ITS THEORY AND PRACTICE. In Original Contributions by American and Foreign Authors. Edited by Sir William Osler, Bart., M.D., F.R.S., and Thomas McCrae, M.D. Volume III: Diseases of the Digestive System—Diseases of the Urinary System. Second Edition, Thoroughly Revised. Illustrated. Lea & Febiger, Philadelphia and New York, 1914.

The subject-matter of Volume III, of this revised system edited by Osler and McCrae, covers Diseases of the Digestive System and Diseases of the Urinary System; the former, included in Part I, comprises 764 pages, and the latter, in Part II, comprises 276 pages.

The initial chapter from the pen of C. G. Stockton is introductory in character and presents the latest knowledge upon such topics as the interrelation of the digestive functions, the nature of functional disturbances of digestion, and the relation of the same to structural changes, structure and function in peptic ulcer, the question of secretion, the place of the biliary tract in digestive pathology, etc., etc. This chapter is an extremely instructive one and prepares the way for a clearer understanding of many complicated problems considered in the succeeding chapters.

Chapter 2, on Diseases of the Mouth and Salivary Glands, by Dr. Riesman, is one of the most practical in the entire volume. After calling attention to the frequent neglect of examination of the oral cavity, the writer discusses systematically and clearly both the common and rare affections. In the elucidation of the text the writer has included six very excellent plates.

In Chapter 3 Diseases of the Esophagus are discussed by J. McCrae. Chapter 4 deals with the Functional Diseases of the Stomach. There is probably no phase of the great problem of digestive disorders about which more is written and less is known than the gastric neuroses; indeed,

there is not any phase of the study more confusing to the general practitioner because of the many and elaborate classifications, conflicting views, and vast array of such long names as Gastralgokenosis, Tormina Ventriculi Nervosa, etc. J. Friedenwald has succeeded in presenting this difficult subject in a very systematic and practical way.

Space forbids comment upon a number of excellent chapters which follow, notably Chapter 5, Organic Diseases of the Stomach, by C. F. Martin; Chapter 6, Diseases of the Intestines, by A. Stengel; Chapter 7, Diseases of the Liver, Gall-Bladder and Biliary Ducts, by the late A. O. J. Kelly, revised by W. Pepper; Chapter 8, Diseases of the Pancreas, by E. L. Opie; Chapter 9, Diseases of the Peritoneum, by H. D. Rolleston; and the final Chapter 10, Splanchnoptosis, Visceroptosis, Enteroptosis, Glénard's Disease, by T. R. Brown.

Chapter 11, the initial chapter of Part II, contains an introduction to the Diseases of the Kidney by J. McCrae. This chapter prepares the reader, so to speak, for a clearer conception of the principles underlying the kidney diseases discussed subsequently. The normal and the pathological physiology, the relative functions of glomerulus and tubule, the functional efficiency of the kidney in disease, and the very excellent paragraphs setting forth the difficulties confronting any effort to present an entirely satisfactory classification of nephritis, are among the topics which are discussed.

Chapter 12 deals with Malformations and Circulatory Disturbances of the Kidney, by J. McCrae. Chapter 13 and Chapter 14 include Anomalies of Urinary Excretion and Uremia, by A. E. Garrod.

Chapter 15 and Chapter 16 deal with Nephritis, Acute and Chronic, and Amyloid Disease of Kidney, by J. B. Herrick. In the discussion of the etiology of Acute Nephritis, Martin Fischer's hypothesis of an "acid condition of parenchymal cells" is presented and the writer states that the work should be followed up, for "the physicochemical and colloid explanations of many of the phenomena of nephritis are in many respects far more satisfying and rational than some of the others." The experiments "should be repeated and broadened, for they are concerned with the basic principles underlying such conditions in albumiuria, casts, the occurrence of edema, etc." The chronic forms of nephritis are discussed in a very practical way; the classification adopted is that of Senator. The subject of nephritis is one which every practitioner meets in his daily work, and a careful perusal of these paragraphs, particularly upon the varied clinical picture, diagnosis and treatment, will amply repay the reader.

The final chapters, 17 to 21, deal with Pyogenic Infections of Kidney, Ureter and Perirenal Tissues and Tuberculosis of the Kidney, by T. R. Brown; Tumors of the Kidney, Urinary Lithiasis; Genito-urinary Diagnoses and Disease of the Prostate, by H. H. Young.

In conclusion it may be stated that Volume III, like its predecessors, Volumes I and II, recently reviewed in these columns, presents the latest knowledge upon a given subject, oftentimes representing a vast amount of work reviewing the literature and sifting the important advances from the unimportant reiteration of commonplace things with which our current litertature is crowded. This fact makes such a work as this of first importance to the busy practitioner who can spend but a limited time in reading, and who upon reading wishes to obtain concise, essential, and authorized information regarding new things as well as old ones. Volume III will be welcomed to the place prepared for it by its predecessors. E. H. F.

BEDSIDE HEMATOLOGY. An Introduction to the Clinical Study of the So-called Blood Diseases and of Allied Disorders. By Gordon R. Ward, M.D., London. Illustrated. Philadelphia and London, W. B. Saunders & Co., 1914.

This book of 383 pages is introduced by an unusually short preface: "This volume is primarily concerned with that clinical study of the so-called blood diseases which has been so much overshadowed by exclusively pathological investigation. It is sec-

ondly concerned with the classification of blood diseases, inasmuch as this is a necessary preliminary to any understanding of their nature."

Dr. Ward's classification, which he admits is open to criticism from many view-points, appears a very good working basis. He speaks of Generalized Affections of Blood-forming Tissues (Leukemias, Hodgkin's Disease), Localized Affections (Myeloma, Splenic Anemia, Lymphatism), Affections of Red-cell Formation and Destruction (including the Anemias, Polycythemia, Cholemia, etc.), Affections of Circulating Red-cells (Malaria, Hemoglobin changes), Affections of White Cells (Leucocytosis), Affections of the Plasma (Chlorosis and Hemophilia), and finally Unclassified Affections (Leukanemia and Purpura).

These are taken up in detail after a short consideration of the blood-forming organs, types of cells, and technique of examination. The clinical side is emphasized, and the book can be recommended as helpful to the practitioner in diagnosis and treatment. Disputed points in etiology and pathology are not allowed to interfere with practical application of known features; dogmatic statements therefore appear, but do not lessen the value of the book. A. G. E.

THE TEXT-BOOK OF MEDICAL DIAGNOSIS. By James M. Anders, M.D., Ph.D., LL.D., and L. Napoleon Boston, A.M., M.D. Second Edition, Thoroughly Revised, Copiously Illustrated. W. B. Saunders Company, Philadelphia, 1914. Price $6.00.

When the first edition of this exhaustive work upon diagnosis appeared three years ago we reviewed it favorably and pointed out that it was one of the most complete manuals dealing with this important subject. When we recall the fact that it covers 1248 pages, including the index, and that the type is rather small and each page well filled, it will be evident that the authors have crowded into it pretty much all that they can bring together in regard to this subject. The book is divided in the same manner that a work upon Practice would be divided, beginning with diseases of the nose and throat and closing with chapters upon diseases of the nervous system, which chapters have been written by Dr. Weisenburg. The rest of the book is by the authors whose names appear on the title-page.

Possibly the book can be best described by stating that it is a work on Practice from which etiology, pathology, and treatment have been excluded, with special emphasis upon diagnosis, and with all the clinical and laboratory methods of investigation. In many instances there are brief paragraphs, however, dealing with etiology in the sense of predisposing factors. In some instances case histories are introduced to illustrate what the authors have to say. Some pieces of apparatus are figured which are rarely used, but some book should contain descriptions of this kind so that the reader who wishes to use them may do so.

As we have said before, the volume represents an immense amount of labor both as to clinical investigation and in the library. That a new edition is called for within three years is testimony as to the value of its contents. The second edition will certainly maintain and increase the reputation of the first.

A TEXT-BOOK OF MILITARY HYGIENE AND SANITATION. By F. K. R. Keefer, A.M., M.D. W. B. Saunders Company, Philadelphia, 1914. Price $1 50.

This is a small book of less than 300 pages, the exact scope or intent of which is not easy to determine. If it is designed for officers in the medical corps of the army it is unnecessarily elementary in its character. If it is designed for line officers in order that they may handle their men and assist staff officers, it excellently fulfils this function. That it must be intended for the latter class seems to be indicated by the fact that elementary definitions are given in the glossary. Thus we find that an abscess is defined as a collection of pus; that an adolescent is defined as a youth prior to maturity; and that bacteriology is defined as a science which treats of bacteria.

That all the statements in the volume can be accepted as correct is doubtful. Thus

the statement that tea and coffee have a tendency to habit formation is erroneous, if the word habit is used as it is employed in connection with opium. The author states, however, that when properly prepared and used caffeine-containing beverages are refreshing and stimulating and are, therefore, of decided military value. We do not think that the statement that phenacetine, aspirin, and acetanilide are dangerous cardiac depressants is correct, nor do we think that the statement that tobacco depends for its influence on the body upon its nicotine is stating the whole truth. We are glad to note that the author is one of those who believes that the canteen is the friend of decency and discipline, and that the solution of the liquor problem rests in the gradual education of the public as to the harmful effects following the use of alcohol. We hope that this book will be widely read by line officers, and staff officers can obtain much useful information in its pages.

THE PHILOSOPHY OF RADIOACTIVITY OR SELECTIVE INVOLUTION. By Eugene Coleman Savidge, M.D. William R. Jenkins Company, New York City, 1914. Price $1.50.

We are told in the preface that this book was begun as an introduction to the medical writings of the author read before scientific bodies and published during the last two decades. As may be imagined from its title, the book is not designed for the active clinician, but is rather a presentation of the author's views on a number of subjects. Thus the first chapter deals with the selected involution of matter, the second with the eternal constant, and the third with quality winding to higher velocity, etc.

THE ART OF COMBINING. By Wilbur L. Scoville, Phar.D. Fourth Edition, Revised, Enlarged and Illustrated. P. Blakiston, Son & Company, Philadelphia, 1914. Price $3.00.

There is probably no pharmacist in the United States better qualified to prepare a book bearing this title than Professor Scoville, who at one time was Professor of the Theory and Practice of Pharmacy in the Massachusetts College of Pharmacy. There is no subject which is of greater interest to druggists than this, and it is one which medical men would do well to carefully consider, as not infrequently skill in diagnosis fails to result in the cure of the patient because of lack of skill in combining the remedies which ought to be given. Careful directions are found in the text as to prescription writing and the proper combination of drugs of all kinds, and the book can be commended to both pharmacists and physicians as one which can be constantly used with advantage.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

There has been a considerable amount of criticism lately concerning the methods of "sick visitors" employed by friendly societies in the administration of the National Insurance Act. The "sick visitors" are supposed to check malingering and imposition, by visiting insured persons in their own homes, and seeing that medical instructions are properly carried out. But some of the visitors have exceeded their instructions, and it is alleged that they have put undue pressure on patients, regardless of medical advice, to "sign off the panel" and go back to work. Cases are reported of sick visitors, not necessarily possessing medical or nursing training, who have insisted on seeing surgical wounds and obliging patients to remove dressings for this purpose. Medical men have, naturally, resented this interference with their patients. Some of the friendly societies have offered to employ nurses to act as "sick visitors," but as they would have to fill up reports and thus make diagnoses from their own observation, this move has been strongly opposed by the nursing organizations. The

problem is a difficult one to solve, as the friendly societies are bound to protect themselves as far as possible from fraud and malingering, and the latter is known to be a great and increasing evil.

The problem of how to distribute equitably the surplus funds for medical benefit under the National Insurance Act has not yet reached a solution, though it has been discussed and rediscussed for months past by various committees. The latest subcommittee in its report states that it is unable to recommend a definite course of action, but is of the opinion that each practitioner on the panel should receive the same proportion of the surplus fund as he does of the main panel fund, which latter amount, of course, is regulated by the number of patients on his panel list. The distribution of this surplus fund has caused a great deal of trouble to the Insurance Commissioners; meanwhile the government has had to provide a million or so to keep the insurance scheme on a sound financial basis.

St. Bartholomew's Hospital has been presented with the sum of £5000, the income of which is to be employed in "assisting necessitous persons to obtain artificial teeth." The generous donor, Mr. Edwin Tate, had noticed the report of an inquest on an old man, who lacked teeth and had choked himself in an endeavor to eat rapidly. The fund will not supply sets of teeth gratis, but it will be employed to assist necessitous persons to the extent of half the estimated cost of the teeth, and nothing will be paid until the dental surgeon has certified that the teeth supplied are satisfactory. So many poor people refrain from having bad teeth extracted, owing to the difficulty of replacing them, that the new fund will be extremely useful, and will also help to improve the general health of the community, by reducing the amount of disease arising from septic conditions of the mouth and teeth.

Some interesting experiments are being carried on at the present time in an attempt to produce an artificial light of the same intensity and color as ordinary daylight. In the past screens have been employed, by placing them in front of electric lamps or incandescent gas, and thus filtering the rays, but this method has been very inefficient from the economic point of view. The suggestion is now made that colored glass spectacles should be used, which would screen off the unwanted rays, so that the eye would appear to see only daylight. If such spectacles can be made successfully on a commercial basis, they will prove a great boon in certain trades where color matching is an important item, such as the making of artificial teeth and the mixing of colors for wall-paper. In these trades the work of matching tints has to be suspended in dark and foggy weather. Picture galleries could also be open at nighttime, and visitors, if supplied with these spectacles, would be able to see the pictures under the same favorable conditions as in daylight.

The managers of the Metropolitan Asylums Casual Wards report that the number of inmates has decreased to such an extent that they have decided to close a certain number of the wards under their control for the holiday season, and in two cases until further notice. The number of homeless people found in Central London has greatly diminished since the police put into operation the scheme for providing all homeless people with tickets directing them to shelters provided by charitable agencies or casual wards. The scheme has led to such satisfactory results that its extension in the near future is probable. The Metropolitan Asylums Board report that the number of scarlet fever cases in London shows another large increase, and in order to provide the necessary accommodation the Board have been obliged to approve the temporary suspension of admission of cases of measles and whooping-cough. The total number of patients in the fever hospitals this week is 4557, which includes 1046 cases of diphtheria.

The bill which was introduced into the House of Commons by Sir Frederick Banbury, to prohibit experiments on dogs, was so drastically amended in committee that

finally it was withdrawn by its promoters. The object of the bill was to render it unlawful to perform any experiment of a nature causing or likely to cause pain or disease to any dog, for any purpose whatsoever. At the first and second meetings of the committee, appointed to consider the bill, a quorum could not be formed owing to the refusal of certain opponents of the bill to enter the room. On the third occasion these members did attend and succeeded in getting various amendments passed. The first inserted the word "inoculation" before "experiments," another omitted the words "or disease," and a third restricted the prohibition to experiments of "an unscientific nature," though no definition of the word "unscientific" was vouchsafed. After these reverses Sir Frederick Banbury moved that the bill be not proceeded with; at the same time he reproached the University members for not giving him more assistance and providing some explanation for their amendments.

The death of Mr. Joseph Chamberlain recalls the many services he rendered to the cause of tropical medicine. Only a few days ago the Colonial Secretary unveiled the portraits of Mr. Chamberlain and Mr. Austen Chamberlain in the Albert Dock Hospital, as a memorial of the work done by father and son on behalf of tropical medicine. The School of Tropical Medicine was founded by Sir Patrick Manson, but its rapid development was largely due to the support of Mr. Chamberlain, who as Colonial Secretary fully realized the urgent need to study the causes of ill health among white people living in the tropics, and thus remove one of the chief difficulties in the administration of our tropical dependencies. The Colonial Secretary mentioned in his speech that the death-rate on the West African Coast among British officers had fallen from 28 to 8 per 1000 in the last ten years, and the invaliding rate had fallen from 62 to 28 per 1000.

The work done by Health Societies in teaching mothercraft to poor women has caused a considerable fall in the death-rate of infants. During the latter half of last century the death-rate among adults continued to fall steadily, owing to improved sanitation and better housing, while the infantile mortality remained fairly stationary, at about 155 per 1000 births. But since 1900 there has been a steady decline, till the figure in London has reached 91. This period has corresponded with the rapid development of schools of mothercraft and infant consultations to which poor mothers can take their children for expert medical supervision and examination. A central association has now been formed for the amalgamation of all infant consultations, and this already possesses some 217 local branches. The Central association promotes new branches, collects statistics, and carries on propaganda work, and keeps in close touch with the Public Health Department. It seems only just to suppose that this increase of knowledge in mothercraft has been the prime cause in the fall of the infantile death-rate during the past few years.